SUMMARY
OF THE FIRST TERM

Summary of Unit One

The meaning of ratio : A ratio is a way of comparing between two quantities by division.

The properties of ratio

Property 1

The ratio has the same properties of the **fraction** as **reduction** , **simplifying** and **comparison**.

Property 2

In its simplest form , the two terms of the ratio should be two **whole numbers as small as possible**.

Property 3

To compare two quantities using ratio , they must have the same unit.

## Property 4

The ratio between two quantities has no units.

Remarks

1. In an equilateral triangle , the ratio of the side length to the perimeter is 1 : 3
2. In a square , the ratio of the side length to the perimeter is 1 : 4
3. In a rhombus , the ratio of the side length to the perimeter is 1 : 4
4. In a square , the ratio of any side length to another side length is 1 : 1
5. In a rhombus , the ratio of any side length to another side length is 1 : 1
6. In a circle , the ratio of the diameter length to the circumference is 2 r : 2 π r (which equals 1 : π)
7. In a circle , the ratio of the radius length to the circumference is r : 2 π r (which equals 1 : 2 π)

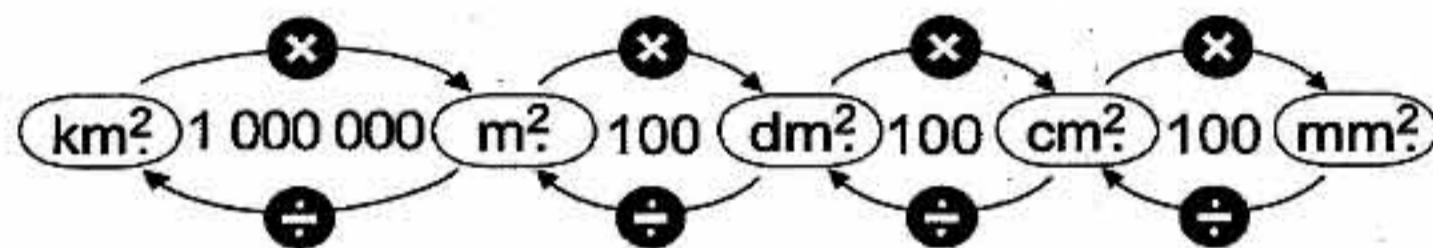## Measuring units and their converting rules

The length units
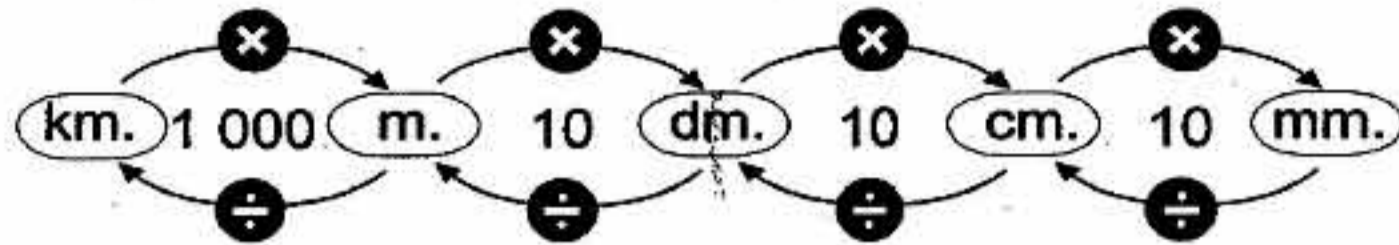
For example :
- $5 \text{ km} = 5 \times 1\,000 = 5\,000 \text{ m}$
- $6\,000 \text{ cm} = 6\,000 \div 100 = 60 \text{ m}$
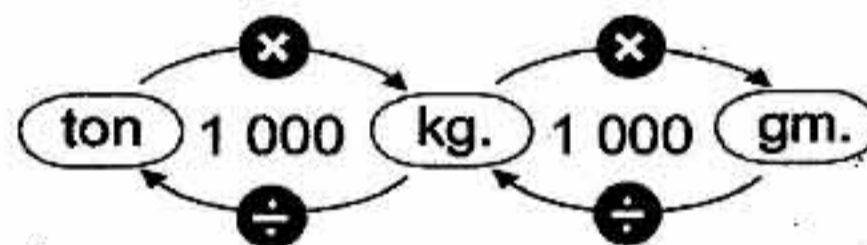
The area units

For example :
- $3 \text{ km}^2 = 3 \times 1\,000\,000 = 3\,000\,000 \text{ m}^2$
- $1\,000 \text{ cm}^2 = 1\,000 \div 100 = 10 \text{ dm}^2$
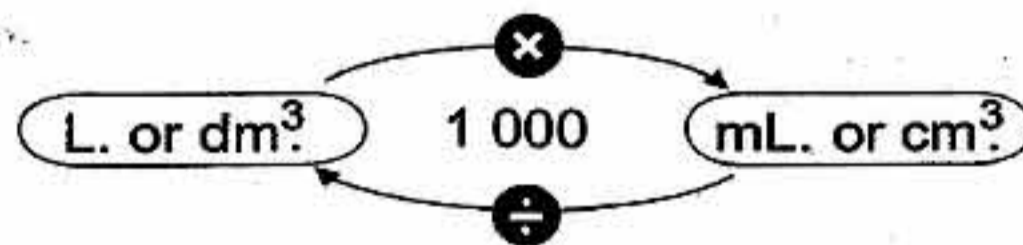
The weight units

For example :
- $6 \text{ kg} = 6 \times 1\,000 = 6\,000 \text{ gm}$
- $20\,000 \text{ kg} = 20\,000 \div 1\,000 = 20 \text{ tons}$

The capacity units

For example :
- $5 \text{ L} = 5 \times 1\,000 = 5\,000 \text{ cm}^3$
- $7\,000 \text{ cm}^3 = 7\,000 \div 1\,000 = 7 \text{ L}$

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The time units
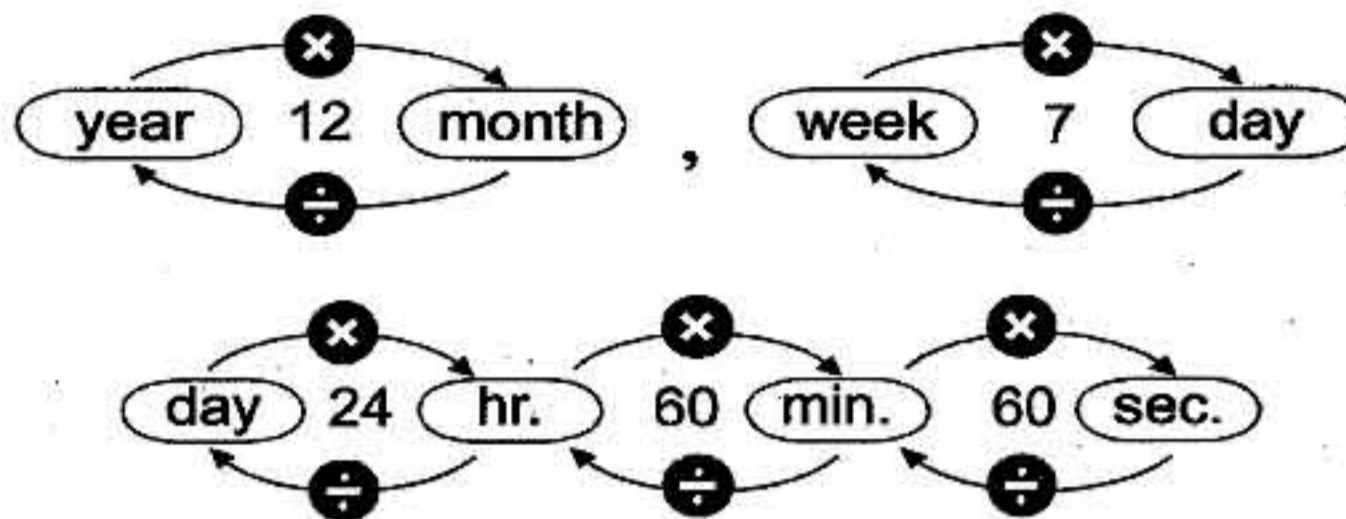
For example :
- 5 hr. = 5 × 60 = 300 min
- 49 days = 49 ÷ 7 = 7 weeks

Units of cultivated lands
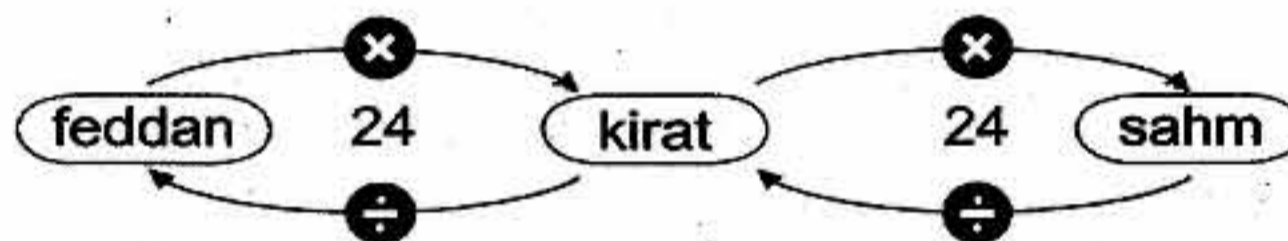
For example :
- 2 feddans = 2 × 24 × 24 = 1152 sahms
- 120 kirats = 120 ÷ 24 = 5 feddans

The money units
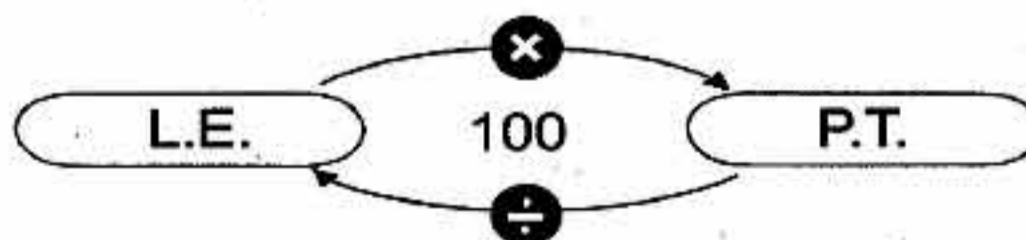
For example :
- L.E. 50 = 50 × 100 = PT 5 000
- P.T. 1 000 = 1 000 ÷ 100 = L.E. 10

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A rate is a ratio of two quantities with different measurement units.

For example : If a car travels **300 km.** in **5 hours**, the rate is

$$\frac{300 \text{ km.}}{5 \text{ hours}}$$ (km. and hour are different measurement units).
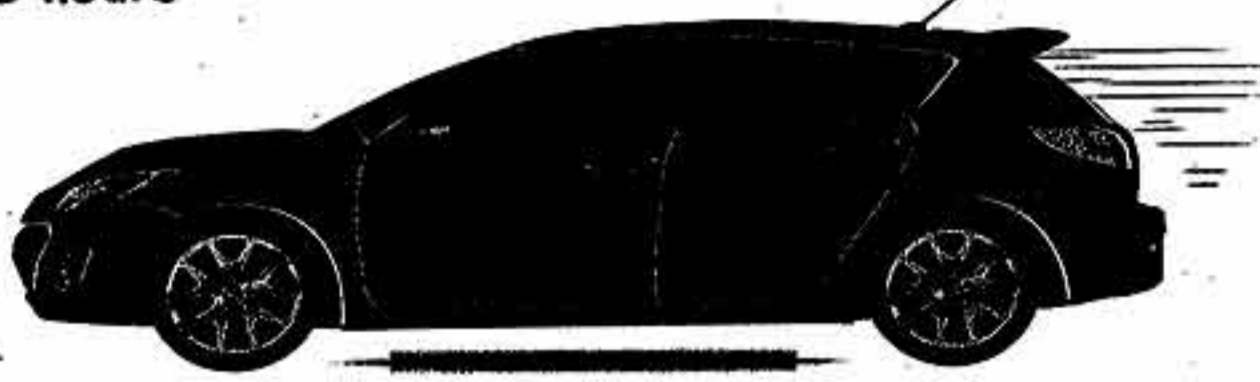
• The rate per 1 hour is $\dfrac{300 \text{ km.}}{5 \text{ hours}} = \dfrac{60 \text{ km.}}{1 \text{ hour}} = 60$ km./hr.

Summary of Unit Two

Proportion is an equality of two or more ratios.

The properties of proportion

Property ①

If we multiply (or divide) each of the two terms of a ratio by the same non-zero number , then the resultant ratio is equal to the first ratio and they together form a proportion.

Property ②

The product of extremes = the product of means

$$\text{Drawing scale} = \frac{\text{Length in drawing}}{\text{Length in reality}}$$

Notice that

Both lengths should have the same units.

Remarks

If the drawing scale is

Less than 1 (< 1)
then it refers to minimization (reduction)
(length in drawing < length in reality

Greater than 1 (> 1)
then it refers to enlargement (magnification)
(length in drawing > length in reality)

Proportional division is to divide anything (money , land , weights , ...) according to a given ratio.

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- A **percentage** is a ratio its second term is 100
- A **percentage** means "per hundred" or "hundredths".

Profit = selling price (S.P.) -- cost price (C.P.)

The percentage of profit = $\dfrac{\text{Profit}}{\text{C.P.}} \times 100\ \%$

Loss = cost price (C.P.) – selling price (S.P.)

The percentage of loss = $\dfrac{\text{Loss}}{\text{C.P.}} \times 100\ \%$

Notice that :

The cost price = buying price + expenditures (where expenditures may be maintenance , transportation , insurance , rentals , ... etc.)

Remarks

① When we say that the **profit** is 20 % , we mean that :

If the **cost** price (C.P.) = L.E. 100 , then the **profit** = L.E. 20 and the **selling** price (S.P.) = L.E. 120

② When we say that the **loss** is 15 % , we mean that :

If the **cost** price (C.P.) = L.E. 100 , then the **loss** = L.E. 15 and the **selling** price (S.P.) = L.E. 85

③ When we say that the **interest** is 8 % , we mean that :

If we **deposit** L.E. 100 in a bank , then the **interest** = L.E. 8 and the **amount of this money after one year** = L.E. 108

④ When we say that the **discount** is 25 % , we mean that :

If the **price before the discount** (The marked price) is L.E. 100 , then **the discount** = L.E. 25 and the **price after the discount** (The discount price) is L.E. 75

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Summary of Unit Three

- **The parallelogram :** is a quadrilateral in which each two opposite sides are parallel.
- **The rectangle :** is a parallelogram with a right angle.
- **The rhombus :** is a parallelogram in which two adjacent sides are equal in length.
- **The square :** is a parallelogram with a right angle and two adjacent sides are equal in length.

Properties of the parallelogram

1. Each two opposite sides are equal in length.

2. Each two opposite angles are equal in measure.

3. The sum of measures of each two consecutive angles is 180°

4. The two diagonals bisect each other.
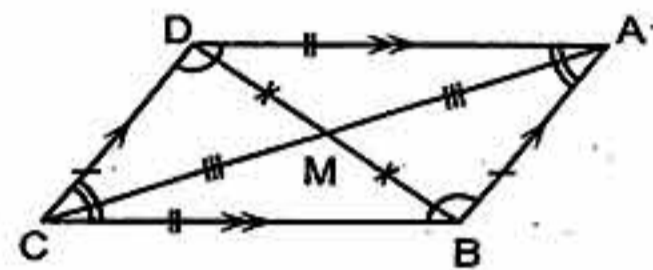
A parallelogram is

a rectangle

If :
- One of its angles is right.

or

- Its two diagonals are equal in length.

a rhombus

If :
- Two adjacent sides are equal in length.

or

- Its two diagonals are perpendicular.

a square

If :
- One of its angles is right and two adjacent sides are equal in length.

or

- One of its angles is right and its diagonals are perpendicular.

or

- The two diagonals are equal in length and perpendicular.

or

- Two adjacent sides are equal in length and its diagonals are equal in length.

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A pattern : is a sequence of symbols or figures arranged according to a certain system or rule.

Pattern unit : In visual patterns , usually you can find a unit which is repeated several times.

Solids

Any object that occupies a room in the space is called a solid.

- **The cuboid** has **12** edges , **8** vertices , **6** faces. and **3** dimensions : **length** , **width** and **height**.
- **The cube** has **12** edges , **8** vertices , **6** faces all these faces are congruent squares and **3** equal dimensions.
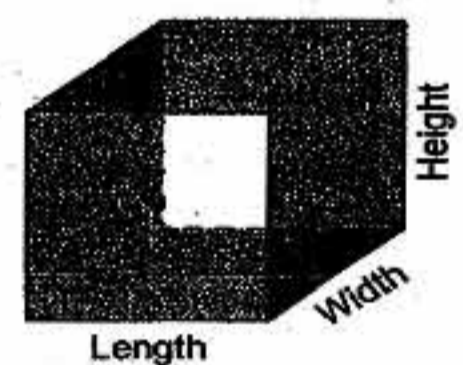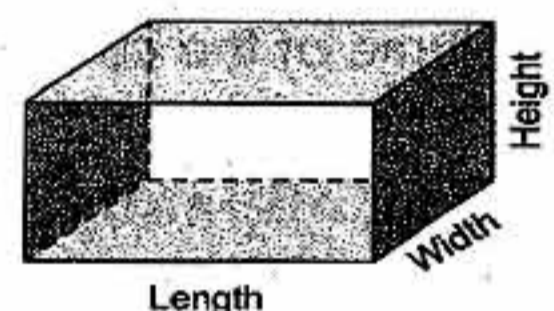
The number of **units** which a solid consists of is called the volume of the solid.

Volume of the cuboid

$$V = L \times W \times H$$

$$L = \dfrac{V}{W \times H}$$

$$W = \dfrac{V}{L \times H}$$

$$H = \dfrac{V}{L \times W}$$

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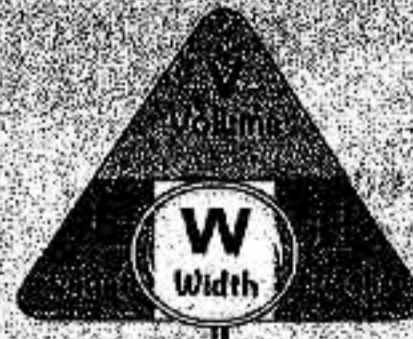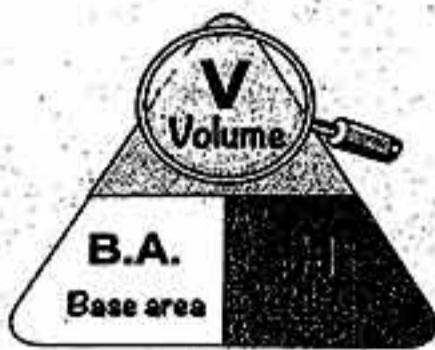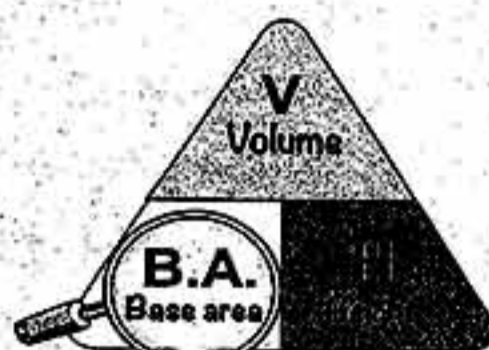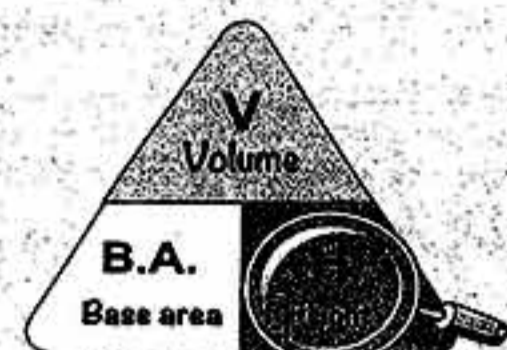
$$V = B.A. \times H \qquad B.A. = \frac{V}{H} \qquad H = \frac{V}{B.A.}$$

Volume of the cube

Volume of the cube = edge length × itself × itself

The capacity : It is the volume of the inner space of a hollow solid.

The litre (L.) and millilitre (mL.) are two units for measuring capacity or the volume of liquids.

The relation between the units of volume

$\times 1000$

m^3

$\times 1000$

dm^3 (litre)

$\div 1000$

$\times 1000$

cm^3 (millilitre)

$\div 1000$

$\times 1000$

mm^3

$\div 1000$

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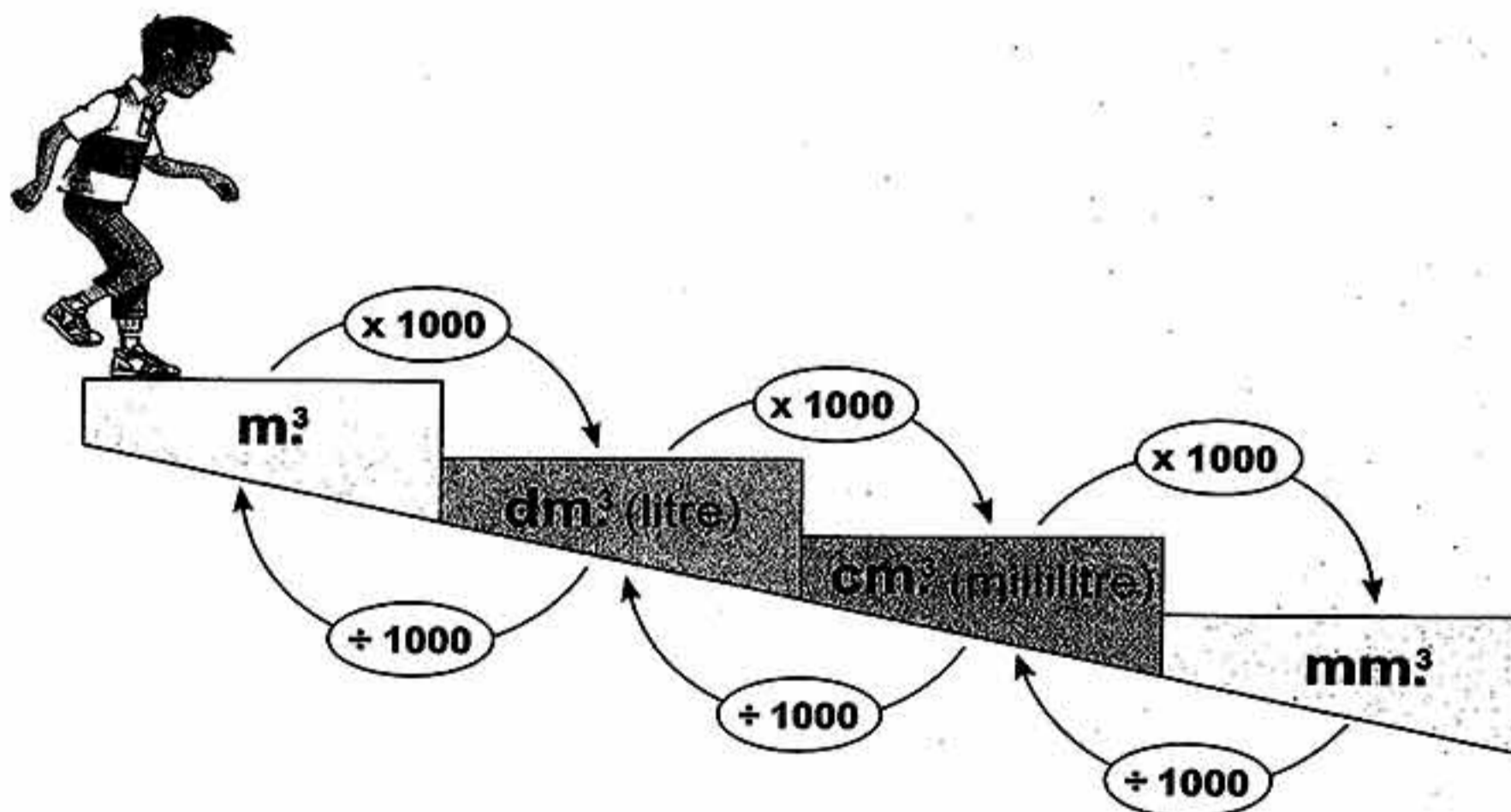
Summary of Unit Four

Kinds of statistical data

1 **Descriptive data :**

These are data written in the form of **discription of the case** of the persons in the society **as :** name , qualification , gender , marital status , ...

2 **Quantitative data :**

These are data written in the form of **numbers** to express a certain phenomenon as : age , weight , height .

Remarks

① The difference between the maximum and the minimum value of the given data is called **the range of this data**.

② The difference between the upper limit and the lower limit of the set is called **the length of this set**.

③ To find the number of sets, we find the quotient of $\dfrac{\text{the range}}{\text{the length of the set}}$

If the quotient is a mixed number, we take the next whole number.

④ Centre of the set = $\dfrac{\text{lower limit + upper limit}}{2}$

Summary

Representing the statistic data by the frequency curve

For Example

The following table shows the frequency distribution of marks of 40 pupils in the mathematics exam :

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	9	7	40

Represent these data by the frequency curve.

Solution

Frequency curve of the marks of pupils

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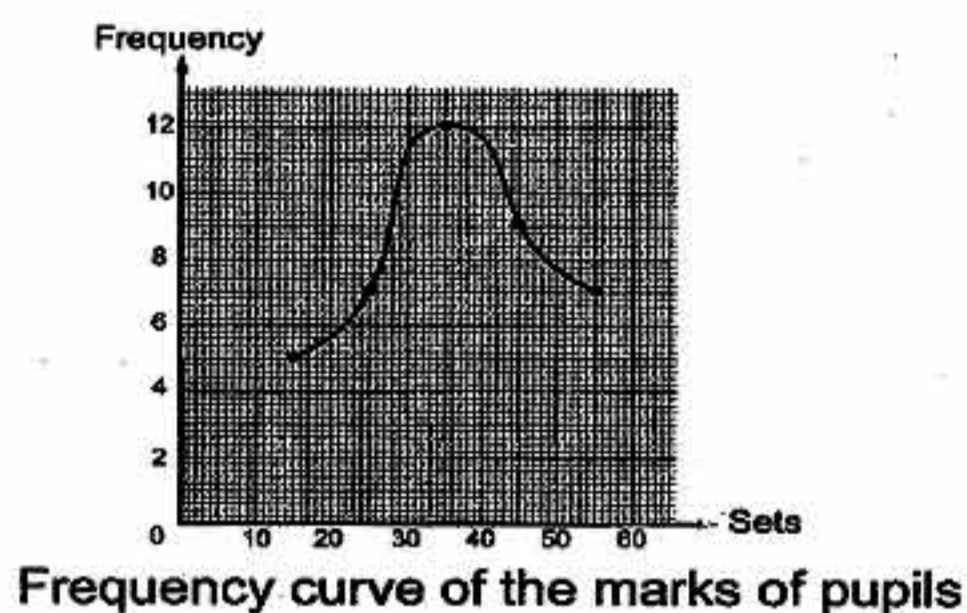
Sheet **1** | *On lesson* **1** *unit* **1** | Total mark **20**

1 *Choose the correct answer between brackets :* **5**

[a] 50 : 300 = ·········· (2 : 5 *or* $\frac{1}{5}$ *or* 1 : 6 *or* $\frac{1}{10}$)

[b] $\frac{3}{5} : \frac{5}{8}$ = ·········· : 25 (24 *or* 27 *or* 15 *or* 40)

[c] 5.5 : 22 = ·········· : ·········· (5 : 2 *or* 4 : 1 *or* 1 : 4 *or* 2 : 5)

[d] 1.5 : 2.5 = ·········· (5 : 3 *or* $\frac{3}{5}$ *or* 3 : 25 *or* $\frac{5}{9}$)

[e] The ratio between the length of a side of a square and its perimeter
= ·········· : ·········· (1 : 1 *or* 4 : 1 *or* 1 : 4 *or* 1 : 16)

2 *Complete each of the following :* **5**

[a] The ratio is ··········

[b] In the ratio $\frac{9}{17}$, the first term is ·········· and the second term is ··········

[c] The radius length of a circle : the circumference of the
circle = ·········· : ··········

[d] $\frac{2}{3} : 3\frac{1}{3}$ = ·········· : ·········· (in the simplest form)

[e] The ratio between the perimeter of an equilateral triangle and its
side length is ·········· : ··········

3 *In the opposite figure :* **3**

Find the ratio between :

[a] The number of coloured squares and the number of all squares.

[b] The number of uncoloured squares and the number of coloured squares.

[c] The number of all squares and the number of uncoloured squares.

4 [a] A school has 200 pupils , if 80 pupils of them are girls , find the **5**
ratio between the number of boys and the number of girls.

[b] *Put each of the following ratios in its simplest form :*

(1) $5 : \frac{5}{4}$ (2) $2\frac{2}{3} : 1\frac{1}{3}$ (3) $\frac{1}{3} : 0.2$ (4) $\frac{15}{45}$
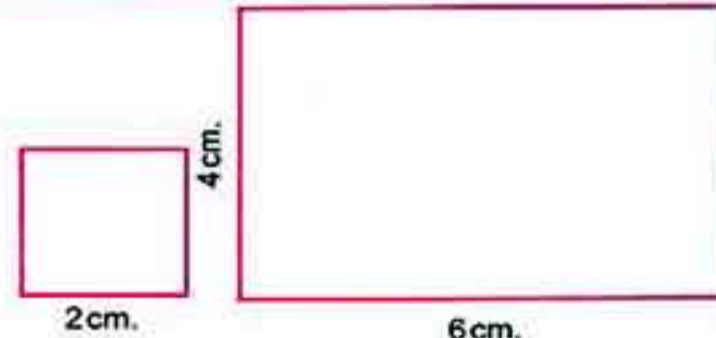
5 *In the opposite figure :* **2**

Find the ratio between :

[a] The perimeter of the square
and the perimeter of the rectangle.

[b] The area of the square and the area of the rectangle.

4 cm.

2 cm.

6 cm.

5

Sheet **2**

From lesson **1** unit **1**
to lesson **2** unit **1**

Total mark **20**

1 *Complete each of the following :* **5**

[a] $\frac{1}{4}$ hour : 20 minutes = ·········· : ·········· (in the simplest form)

[b] 4.5 : 9 = ·········· : ··········

[c] P.T. 50 : L.E. $1\frac{1}{2}$ = ·········· : ·········· (in the simplest form)

[d] The ratio between the lengths of two sides of a square is ·········· : ··········

[e] 2 m. : 400 cm. = 1 : ··········

2 *Choose the correct answer between brackets :* **5**

[a] The diameter length of the circle : its circumference = ··········

(1 : 2π **or** 1 : π **or** π : 1 **or** 2π : 1)

[b] $\frac{1}{8}$ kg. : 100 gm. = ·········· (4 : 5 **or** 5 : 2 **or** 8 : 15 **or** 5 : 4)

[c] 16 kirats : 1 feddan = ·········· : ··········

(16 : 1 **or** 2 : 3 **or** 3 : 2 **or** 8 : 3)

[d] $\frac{2}{3} : \frac{3}{4}$ = ·········· : ·········· (in the simplest form)

(8 : 9 **or** 2 : 3 **or** 2 : 4 **or** 8 : 7)

[e] 18 hours : one day = ·········· : ··········

(2 : 9 **or** 1 : 3 **or** 3 : 4 **or** 4 : 3)

3 *Find each of the following ratios in its simplest form :* **4**

[a] 6 days : 2 weeks [b] 5 dm. : 5 m.

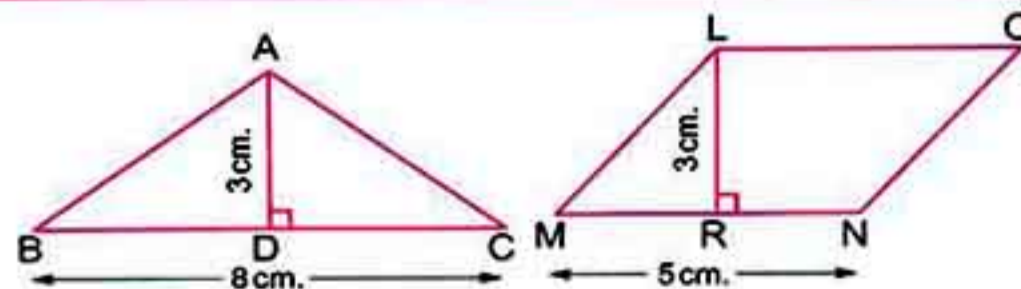[c] 5 kg. : 7 000 gm. [d] $\frac{1}{2}$ L. : 250 mL.

4 The distance between Adel's house and the sport's club which he joins is 350 metres and the distance between his house and his school is 1.4 kilometres. What is the ratio between the two distances ? **3**

5 *In the opposite figure :* **3**

Find the ratio between the area of the triangle ABC and the area of the parallelogram LMNO

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Sheet 3

1 *Complete :*

[a] If the ratio between Tamer's height and Hend's height is 9 : 8 and the difference between their heights is 20 cm. , then the height of Hend is .... cm.

[b] The ratio between two numbers = $\dfrac{\text{............}}{\text{............}}$

[c] P.T. 750 : L.E. 10 = ... : ....

[d] A rectangle of perimeter 42 cm. and the ratio between its length and its width is 5 : 2 , then its length is .... cm. and its width is .... cm.

[e] 300 gm. : $1\frac{1}{2}$ kg. = ... : .... (in the simplest form)

2 If the ratio between the number of boys and the number of girls in a class is 2 : 3 , if the number of boys is 12 , find the number of girls.

3 *Choose the correct answer between brackets :*

[a] Two wires , the ratio between their lengths is 3 : 4 and the length of the first wire is 75 cm. , then the length of the second wire is .... m. (1 *or* 100 *or* 10)

[b] If the area of a rectangle is 40 cm². and its length is 0.8 dm. , then the ratio between its length and width = ... : .... (5 : 8 *or* 8 : 5 *or* 5 : 1)

[c] The ratio between what Yassmien and Marwa has is 3 : 5 , if Marwa has 40 pounds , then Yassmien has .... pounds. (30 *or* 15 *or* 24)

[d] The ratio 12 : 18 in its simplest form by dividing both terms by .... (2 *or* 3 *or* 6)

[e] If the sum of two numbers is 40 and the ratio between them is 3 : 5 , then the smaller one = ... (8 *or* 15 *or* 25)

4 If the sum of two amounts of money is L.E. 1800 and the ratio between the two amounts is 2 : 7 , find each of the two amounts.

5 The ratio between the length and the width of a rectangle is 7 : 4 , if the width is less than the length by 21 cm. , then find the area of the rectangle.

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Sheet 4

From lesson **1** unit **1**
to lesson **4** unit **1**

Total mark **20**

1 *Complete each of the following :* (5)

[a] 12 : 18 : 30 = ············ : ············ : ············ (in the simplest form)

[b] 2.5 : 5 : 3.5 = ············ : ············ : ············ (in the simplest form)

[c] 0.5 km. : 700 m. : 900 m. = ············ : ············ : ············ (in the simplest form)

[d] If a : b = 3 : 5 and b : c = 2 : 5 , then a : b : c = ············ : ············ : ············

[e] The ratio between the side length of a rhombus and its perimeter

= ············ : ············

2 [a] If the ratio between the measures of the angles of a triangle
is 3 : 4 : 5 Find the measure of each angle of the triangle. (4)

[b] The ratio between two numbers is 5 : 6 , if their sum is 297
Find the two numbers.

3 *Choose the correct answer between brackets :* (5)

[a] If a : b = 5 : 6 and b : c = 3 : 4 , then a : c = ············ : ············

(3 : 5 *or* 5 : 3 *or* 5 : 8 *or* 8 : 5)

[b] $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ = ············ : ············ : ············

(2 : 3 : 4 *or* 4 : 3 : 2 *or* 6 : 4 : 3 *or* 3 : 4 : 2)

[c] 400 piastres : 12 pounds = ············ : ············

(1 : 3 *or* 3 : 1 *or* 1 : 4 *or* 2 : 3)

[d] The ratio between three numbers is 3 : 4 : 7 and their sum is 70 ,
then the greatest number is ············ (15 *or* 35 *or* 20 *or* 14)

[e] 16 : 48 = $\frac{1}{············}$

(2 *or* 4 *or* 5 *or* 3)

4 [a] A piece of land in the form of a triangle , the ratio between its side
lengths is 4 : 6 : 7 , if the perimeter of this land equals 51 m.
Find the lengths of its sides. (4)

[b] If the ratio between Adam's money : Nada's money : Seif's money
is 6 : 5 : 2 , and the difference between Adam's money and Seif's money
is L.E. 200 Find the money of each one of them.

5 If L.E. 988 is divided among Mohamed, Hany and Amr such that the share
of Mohamed is $\frac{1}{2}$ of that of Hany and the share of Hany is $\frac{3}{2}$ of that of Amr. (2)
Find the share of each of them.

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Sheet **5**

From lesson **1** unit **1**
to lesson **5** unit **1**

Total mark **20**

1 *Choose the correct answer between brackets :*   **4**

[a] A tractor ploughs 14 feddans in 3.5 hours , then the rate of performance
of the tractor = ·········· feddans/hour.   ($\frac{1}{4}$ *or* 4 *or* 10.5 *or* 7)

[b] A factory produces 4 000 cans for juice during 8 hours , then the
rate of the production is ·········· cans/hour

(32 000 *or* 500 *or* 5 000   4 008)

[c] A machine produces 500 m. of material in 2 hours and half , then
the rate of the production of this machine is ·········· m./hour.

(400 *or* 125 *or* 1 000 *or* 200)

[d] If Omar drinks 14 glasses of milk weekly , then the rate of what he
drinks daily is ·········· glasses.   (3 *or* 7 *or* 14 *or* 2)

2 [a] If a car covers 270 km. in three hours , find the average speed of
the car through this trip.   **4**

[b] The number of pupils in the sixth grade in a school is 260 , the ratio
between the number of boys to the number of girls is 6 : 7
Find the number of each of boys and girls in this grade.

3 [a] If the ratio between Bassem's share : Mina's share : Amgad's share
is 3 : 4 : 5 and the share of Bassem is L.E. 24   **4**
Calculate the share of each of Mina and Amgad.

[b] A factory produces 200 bottles of juice in 10 hours.

Calculate the production rate of the factory.

4 [a] A machine produces 450 kg. of metal in 3 hours. Calculate the rate
of production of the machine.   **4**

[b] If a worker paints a wall of area 45 m^2 in 5 hours , what is the rate
of his work ? and how many square metres does the same worker
paint in 7 hours ?

5 [a] The ratio between the heights of two buildings is 3 : 7 , if the second
building is 35 m. high. Find the height of the first building.   **4**

[b] A car consumes 160 litres of petrol to cover a distance of 240 km.
Find the rate of consumption petrol of that car.

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Sheet **6**

From lesson **1** unit **1**
to lesson **1** unit **2**

Total mark **20**

1 *Complete each of the following :* 5

[a] The proportion is ············

[b] $\dfrac{7}{12} = \dfrac{28}{\text{···········}} = \dfrac{\text{···········}}{36}$

[c] $\dfrac{8}{\text{···········}} = \dfrac{1}{3} = \dfrac{\text{···········}}{15}$

[d] $\dfrac{\text{···········}}{6} = \dfrac{12}{18} = \dfrac{6}{\text{···········}} = \dfrac{\text{···········}}{3}$

[e] 150 gm. : $\dfrac{1}{4}$ kg. = ············ : ············

2 A car consumes 12 litres of petrol in 150 km. 2

Complete the following proportion table :

Petrol in litre	12	···········	36
Distance in km.	150	100	···········

3 Complete the following table to make the corresponding numbers in the two rows proportional : 3

1.3	···········	1	3	···········	5.5	···········
···········	5	10	···········	45	···········	6.7

4 The number of pupils in a primary school is 400 pupils , if the number of girls is 250 , find : 5

[a] The ratio between the number of girls and the number of boys.

[b] The ratio between the number of boys and the number of all pupils.

5 A machine produces 16 units from a certain product in 4 hours , what is the rate of the machine ? then how long does this machine take to produce 25 units ? 5

Sheet 7

From lesson **1** unit **1**
to lesson **2** unit **2**

Total mark **20**

1 *Complete :* (5)

[a] The product of the extremes = the product of ············

[b] The fourth proportional term in 3 , 6 and 12 is ············

[c] If 3 , x , 12 and 16 are proportional numbers , then x = ············ and it is called the ············ term.

[d] If $\dfrac{5}{9} = \dfrac{15}{x}$, then x = ············

[e] If $\dfrac{a}{b} = \dfrac{x}{y}$, then $a \times y$ = ············ × ············

2 *Complete the missing number in each of the following proportions :* (4)

[a] 2 , 11 , 8 , ············

[b] 5 , 8 , ············ , 24

[c] 9 , ············ , 4.5 , 4

[d] ············ , 7 , 24 , 56

3 *Choose the correct answer :* (5)

[a] If $\dfrac{a + 6}{20} = \dfrac{1}{2}$, then a = ············ (6 *or* 4 *or* 3 *or* 10)

[b] If the numbers 2 , 3 , 4 and x are proportional , then the value of x = ············ (5 *or* 6 *or* 7 *or* 8)

[c] $\dfrac{2}{5} = \dfrac{\cdots\cdots}{17.5}$ (35 *or* 10 *or* 7 *or* 2.5)

[d] 18 hours : one day = ············ (18 : 1 *or* 4 : 3 *or* 3 : 4 *or* 2 : 3)

[e] If 3 a = 4 b , then $\dfrac{a}{b}$ = ············ ($\dfrac{3}{4}$ *or* $\dfrac{2}{3}$ *or* $\dfrac{4}{3}$ *or* $\dfrac{3}{2}$)

4 [a] A car consumes 20 litres of fuel to cover a distance of 180 km. How many litres are needed to cover 540 km. (4)

[b] If the ratio among the heights of three buildings is 3 : 4 : 5 , the height of the first building is 21 m. Calculate the height of the second and the third buildings.

5 A machine produces 1 400 m. of textile in two hours. Calculate the needed time to produce 4 900 m. of textile. (2)

11

Sheet **8**   From lesson **1** unit **1**   to lesson **3** unit **2**

Total mark **20**

1 *Complete :*

[a] The drawing scale = ...

[b] If the drawing scale is 1 : 300 , and the length in drawing is 2 cm. , then the length in reality = ... metres.

[c] If the drawing length of an object is 3 cm. and its real length is 30 metres , then the drawing scale is ....

[d] The ratio $\frac{5}{13}$, its first term is .... and its second term is ....

[e] If the drawing scale is less than 1 , then it refers to ....

5

2 [a] The distance between two cities is 20 km. , if the distance between them on a map is 4 cm.
Find the drawing scale of this map and what does it mean ?

[b] The real length of an insect is 0.4 mm. and its length under a microscope is 2 cm. , find the ratio of magnification.

4

3 Cairo tower is one of the tourists places of Cairo , its height is 187.2 m. , if its height in a picture is 13 cm.

[a] Find the drawing scale.

[b] If the length of a neighboured building in the same picture is 3.5 cm.
Find its real length.

3

4 [a] The ratio of the production of three factories for TV sets is 3 : 2 : 1 , if the sum of their production is 9 600
Find the production of each one.

[b] An engineer drew a map of a rectangular garden with a scale 1 : 3 000
Find the real area of this garden if its dimensions on the map are 3.6 cm. and 2 cm.

4

5 [a] The real distance between Cairo and Alexandria is 220 km. , find the distance between them on a map drawn with a scale 1 : 500 000

[b] A magnified picture of an insect was photographed by a scale 200 : 1
Find the length of the insect in the picture if its real length is 0.14 mm.

4

12

Sheet **9**

1 [a] Distribute L.E. 360 among three persons in the ratio 5 : 3 : 4

[b] The difference between two numbers is 12 and the ratio between them is 5 : 7 Find the two numbers.

(4)

2 Three persons participated in a commercial , the first paid L.E. 15 000 , the second paid L.E. 25 000 and the third paid L.E. 20 000
At the end of the year , the profit was L.E. 5 520
Find the share of each of them.

(4)

3 [a] A map is drawn with a scale 1 : 1 000 000 Find the real distance between El-Fayoum and Beni Suef in kilometres if the map distance is 5 cm.

[b] If the ratio of the production of 3 factories for a certain type of washing machines is 5 : 4 : 3 , and the production of the third factory is 3 600 washing machines.
Find the production of the first and the second factories.

(4)

4 A load of apple weighs 330 kg. is distributed among three merchants in which the share of first = $\frac{2}{3}$ the share of the second , and the share of the second = $\frac{1}{2}$ the share of the third , calculate the share of each of them from this load.

(4)

5 A man died leaving 192 feddans of land to be distributed among his wife , 2 sons and 3 daughters , the share of the wife is $\frac{1}{8}$ of the whole land , and the share of the son is twice that of the daughter.
Find the share of the wife and the share of each son and daughter.

(4)

Sheet **10**

From lesson **1** unit **1**
to lesson **5** unit **2**

Total mark **20**

1 *Complete :*

5

[a] The percentage is ············

[b] $\frac{6}{25}$ = ············ %

[c] $1\frac{3}{4}$ = ············ %

[d] 70 % = ········· (in a fractional form)

[e] 1 − (35 % + 20 %) = ········· %

2 *Convert each of the following into a percentage :*

4

[a] 0.07   [b] $\frac{3}{5}$

[c] $\frac{9}{20}$ [d] 0.6

3 If $\frac{x}{40}$ = 35 % ,

find the value of x

3

4 [a] In a class , there are 48 pupils , if 6 of them are absent.

Find the percentage of absentees and also the percentage

of attendance.

4

[b] An amount of money was distributed among Heba , Hend and Nada

in the ratio 2 : 3 : 4 , if Nada's share is L.E.15 more than Heba's share.

Find the total amount of the money.

5 [a] The monthly salary of an employee is L.E. 936 He saved L.E. 117

Find the percentage of what he saved to its salary.

4

[b] The real distance between Cairo and Banha is 40 km. and the

distance between them on the map is 8 cm.

Find the drawing scale for this map.

Sheet **11**

From lesson **1** unit **1**
to lesson **6** unit **2**

Total mark **20**

1 *Choose the correct answer between brackets :*

[a] $50\% + \frac{1}{5} = \ldots\ldots \%$ (55 *or* 70 *or* 45 *or* 10)

[b] If 9 , x , 24 and 32 are proportional quantities , then $x = \ldots\ldots$

(12 *or* 15 *or* 3 *or* 6)

[c] 45 % of 300 pounds = $\ldots\ldots$ pounds

(45 *or* 35 *or* 150 *or* 135)

[d] If a merchant bought a TV set for L.E. 1 000 , then sold it for
L.E. 1 200 , then the percentage of profit is $\ldots\ldots$ %

(20 *or* 30 *or* 15 *or* 45)

[e] Khaled bought a car in the price L.E. 60 000 and he sold it with
profit 5 % , then the selling price of the car is L.E. $\ldots\ldots$

(61 000 *or* 62 000 *or* 63 000 *or* 65 000)

2 **[a]** A trader sold goods for L.E. 550 with a profit of 10 %
Find the cost price of the goods.

[b] A piece of cloth of 10 metres long is put in water , it shrank by 5 %
from its original length. Find its length after shrinking.

3 **[a]** The length of a road is 120 km. , it is wanted to pave the road in
three months. If 42 % in the first month and 28 % in the second
month. How many kilometres will be paved in the third month ?

[b] Ramy deposited L.E. 3 000 in a bank with an interest 11%
Find the total amount after one year.

4 **[a]** The price of a TV set is L.E. 1 450 , in the sale , its price becomes
L.E. 1 160 Find the percentage of the discount.

[b] XYZ is a triangle in which XY : YZ : ZX = 4 : 5 : 7
and ZX = 28 cm. Find the perimeter of the triangle.

5 A trader bought some goods for L.E. 960 and spent L.E. 20
for transportation , then he sold it with profit 20 %
Find the selling price.

15

Sheet **1**

On lesson **1** unit **3**

Total mark **20**

---

1 *Complete each of the following :*

[a] The two diagonals are equal in length in ·········· and ··········

[b] **In the opposite figure :**

ABCD is a parallelogram

, m (∠ A) = 50°

, then m (∠ B) = ·········· °
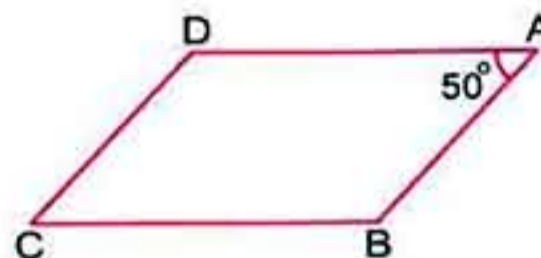
[c] The rhombus is a parallelogram in which two adjacent sides are ··········

[d] A parallelogram in which its diagonals are equal in length is called ··········

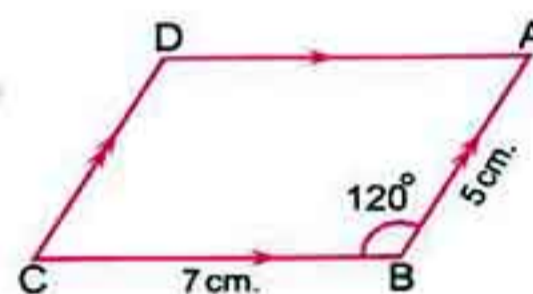[e] The shape that the two diagonals are perpendicular and equal in length is ··········

5

---

2 *In the opposite figure :*

ABCD is a parallelogram in which
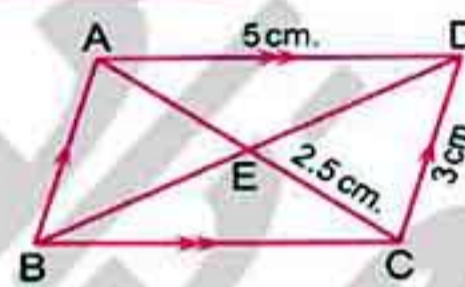
AB = 5 cm. , BC = 7 cm. ,

m (∠ ABC) = 120°

Without using geometrical instruments

Find : m (∠ ADC) , the length of $\overline{DC}$ and the length of $\overline{AD}$

3

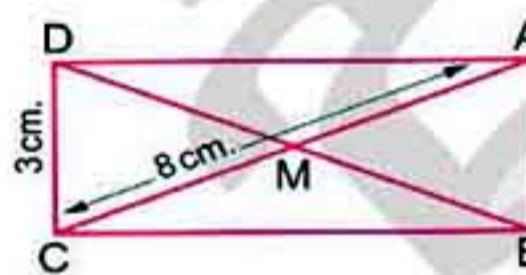---

3 *In the opposite figure :*

ABCD is a parallelogram in which

CD = 3 cm. , EC = 2.5 cm. , AD = 5 cm.

Find the length of each of : $\overline{AB}$, $\overline{BC}$ and $\overline{AC}$

3

---

4 *In the opposite figure :*

ABCD is a rectangle in which AC = 8 cm.

and CD = 3 cm.

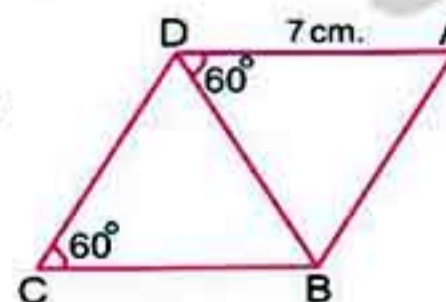Find : (1) Length of $\overline{BD}$

(2) The perimeter of △ ABM

3

---

5 [a] *In the opposite figure :*

ABCD is a parallelogram in which m (∠ C) = 60°

, m (∠ ADB) = 60° and AD = 7 cm.

Find : (1) m (∠ A) and m (∠ ABD)

(2) The type of the triangle ABD according to its sides

(3) The perimeter of the shape ABCD

6

المعاصر رياضيات (Worksheets & Examinations) / ٦ ب / ترم ١ (م : ٣) **17**

Worksheets

[b] *In the opposite figure :*
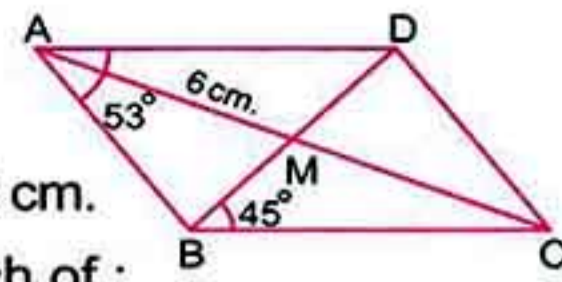
ABCD is a parallelogram in which

m (∠ BAD) = 53° , m (∠ DBC) = 45° , AM = 6 cm.

Calculate without using measuring tools each of :

(1) m (∠ ABD) **(2)** m (∠ ADC) **(3)** AC

Sheet **2**

From lesson **1** unit **3**
to lesson **2** unit **3**

Total mark **20**

1 *Draw the next shape in each pattern in each of the following :*

[a]

[b]

[c]

[d]

[e]

2 *Choose the correct answer between brackets :*

5

[a] The two diagonals are perpendicular and equal in length in ············

(rectangle *or* square *or* parallelogram *or* rhombus)

[b] △ □ ⬠ ············ (in the same pattern)

(▭ *or* ⬡ *or* ▱ *or* ◇)

[c] In the opposite figure :

The number of trapezoids is ············

(1 *or* 2 *or* 3 *or* 5)
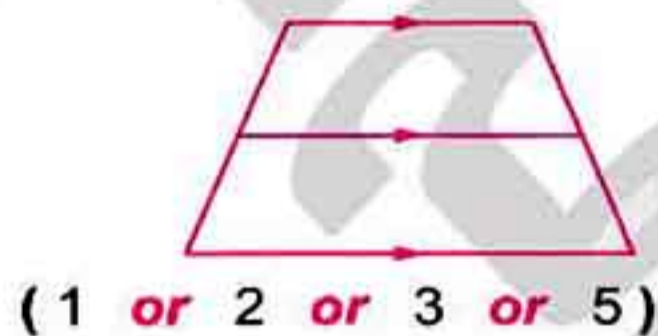
[d] ············

(The description of the pattern is repetition of ············)

(*or* ············ *or* ············ *or* ············)

[e] If one angle in a parallelogram is right , then it is called ············

(trapezium *or* square *or* rectangle *or* rhombus)

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Worksheets

3 [a] *In the opposite figure :*

ABCD is a parallelogram then

find the value of each of x and y
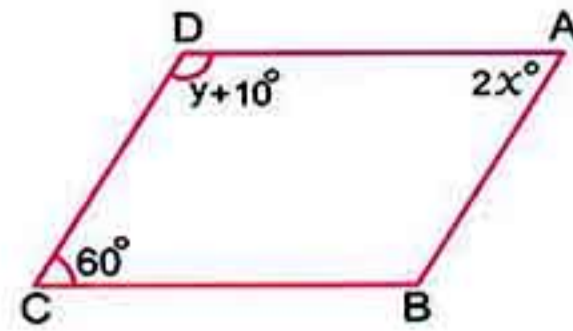
[b] Discover the following pattern

, then write its description :

(The description of the pattern is repetition of ··········)

4 *In the opposite figure :*

ABCD is a parallelogram in which m ($\angle$ B) = 100° ,

m ($\angle$ CAD) = 30° and BC = 5 cm.

Find :

[a] m ($\angle$ D)

[b] m ($\angle$ ACD)

[c] The length of $\overline{AD}$
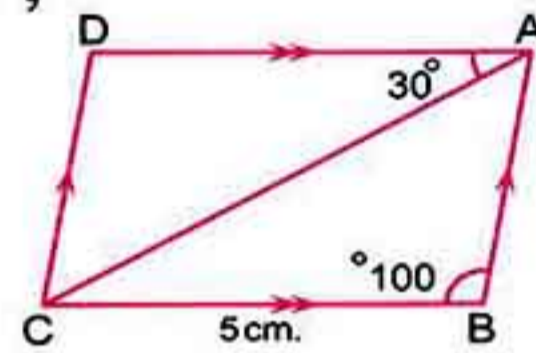
5 *Complete in the same pattern :*

[a]

[b]

[c]

تفوقك في أي مذكرة عليها العلامة دي
www.facebook.com/groups/zakrolypr6

الصف السادس الابتدائى موقع ذاكرولى التعليمى المعاصر

S heet **3**

From lesson **1** unit **3**
to lesson **3** unit **3**

1 Find the volume of each of the following figures considering the unit of volume is cm.³ :
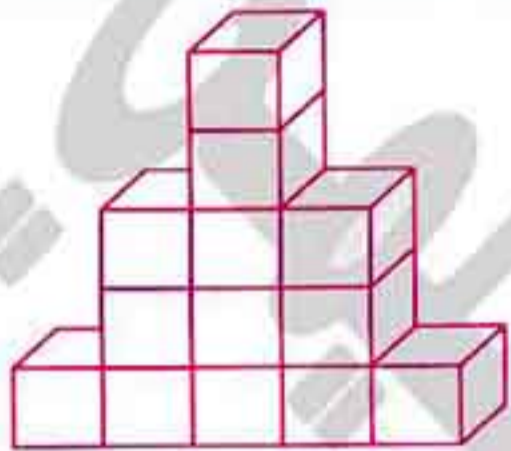
Fig. (1)
The volume = ·········· cm³
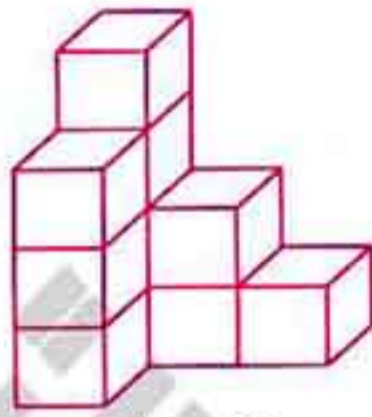
Fig. (2)
The volume = ·········· cm³
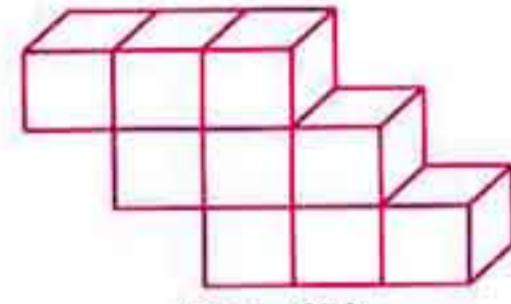
Fig. (3)
The volume = ·········· cm³

2 Complete each of the following :

[a] In the cuboid , each two opposite faces are ·········· and ··········

[b] In the cube , there are ·········· edges and ·········· vertices.

[c] 17 m³ = ·········· dm³

[d] If the dimensions of a cuboid are equal in length , then it is called ··········

[e] The cubic centimetre is ··········

3 Choose the correct answer between brackets :

[a] In the parallelogram , the sum of measures of any two consecutive angles = ··········°   (90 **or** 180 **or** 100 **or** 80)

[b] Each of cube and cuboid has ·········· faces.(8 **or** 12 **or** 6 **or** 4)

[c] 3 250 mm³ = ·········· cm³   (3.25 **or** 32.5 **or** 0.325 **or** 325)

[d] 7 dm³ = ·········· cm³   (0.007 **or** 7 000 **or** 700 **or** 70)

[e] In the cube , all the edges are ··········
(different in length **or** equal in length **or** parallel **or** intersecting)

4 In the opposite figure :

ABCD is a parallelogram in which AB = 6 cm. ,
BC = 7 cm. , BM = 3.8 cm. , m (∠ C) = 70°
Without using geometrical instruments , find :
m (∠ ADC) , the perimeter of △ BCD

21
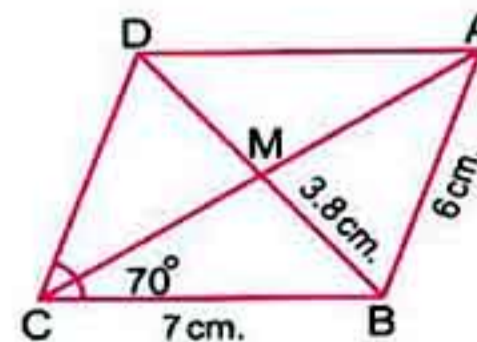
Worksheets

5 **[a]** *Arrange each of the following ascendingly :*

5 m^3 , $500\,000 \text{ cm}^3$ and 50 dm^3

[b] *In the opposite figure :*

ABCD is a rhombus in which m ($\angle$ BCD) = 60° ,

AB = 7 cm.

Find : **(1)** The perimeter of the figure ABCD

(2) m ($\angle$ ABC)
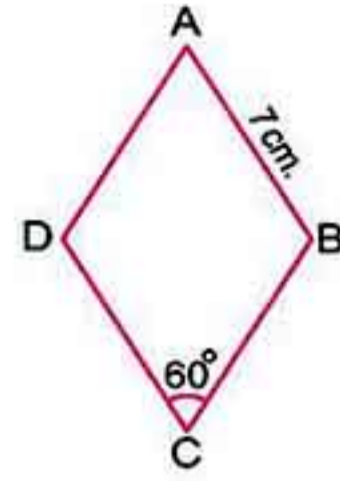
Sheet **4**

From lesson **1** unit **3**
to lesson **4** unit **3**

1 *Complete each of the following :*

[a] The volume of the cuboid = ··········· × height

[b] The volume of the cuboid whose dimensions are 5 cm. , 6 cm.
and 8 cm. is ··········· cm.^{3}

[c] The volume of a cuboid with base area 88 cm.^{2} and height 45 cm. is ···········

[d] The base area of the cuboid = $\dfrac{·····················}{·····················}$

[e] The four angles are right in each of ··········· and ···········

5

2 [a] *In the opposite figure :*
ABCD is a parallelogram which has AB = 3 cm.
, BC = 5 cm. and m (∠ BAD) = 60°

(1) Find : m (∠ ABC)

(2) Calculate the perimeter of the parallelogram ABCD

[b] A cuboid-shaped box of dimensions 12 cm. , 6 cm. and 18 cm. was
filled with pieces of sweets , each piece in the shape of a cuboid
of dimensions 2 cm. , 1 cm. and 3 cm.
Find the number of the pieces that filled the box.

4

(figure: parallelogram with D at top-left, A at top-right, angle 60° at A, side 3 cm., C at bottom-left, B at bottom-right, 5 cm. base)
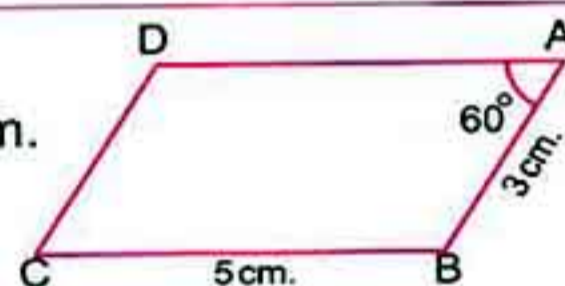
3 *Choose the correct answer between brackets :*

[a] 6 500 dm.^{3} = ··········· m.^{3} (6.5 *or* 65 *or* 650 *or* 6 500 000)

[b] If the volume of a cuboid is 1 800 cm.^{3} and its base dimensions are
30 cm. and 10 cm. , then its height = ··········· cm.
(9 *or* 6 *or* 12 *or* 15)

[c] The number of faces of the cuboid is ···········
(4 *or* 6 *or* 12 *or* 8)

[d] If a cuboid of volume 72 cm.^{3} , its height is 6 cm. and its length is
4 cm. , then its width = ··········· cm.   (12 *or* 9 *or* 6 *or* 3)

[e] Cubic decimetre is a unit for measuring ···········
(length *or* volume *or* weight *or* area)

5

4 The sum of dimensions of a cuboid is 240 cm. and the ratio among
them is 2 : 3 : 5 Find its volume.

3

5 3 600 cm.^{3} of water was poured in a cuboid-shaped vessel with a square
base of side length 20 cm. Find the height of water in the vessel.

3

23

Sheet **5**

From lesson **1** unit **3**
to lesson **5** unit **3**

Total mark
20

1 *Complete :*

[a] The volume of the cube = ············ × ············ × ············

[b] A cube of edge length 6 cm. , its volume = ············ cm^3.

[c] The area of one face of a cube is 9 cm^2. , then its volume = ············ cm^3.

[d] If the sum of the lengths of the edges of a cube is 60 cm. , then its volume = ············

[e] If the perimeter of one face of a cube is 8 cm. , then the volume of this cube = ············

2 *Choose the correct answer between brackets :*

[a] 10 dm^3. = ············ cm^3. (10 *or* 100 *or* 1 000 *or* 10 000)

[b] The volume of a cuboid is 120 cm^3 , if its base area is 24 cm^2. , then its height = ············ cm. (5 *or* 6 *or* 10 *or* 12)

[c] The number of vertices of a cube is ············ (8 *or* 12 *or* 6 *or* 4)

[d] The parallelogram in which two adjacent sides are equal in length is called ············

(a square *or* a rectangle *or* a trapezium *or* a rhombus)

[e] A cuboid with a square base of side length 7 cm. and height 10 cm. , then its volume is ············

(49 cm^3. *or* 70 cm^2. *or* 70 cm^3 *or* 490 cm^3.)

3 [a] Which is greater ? The volume of a cube of edge length 5 cm. or the volume of a cuboid of dimensions 6 cm. , 5 cm. and 4 cm.

[b] A metal cuboid with dimensions 56 cm. , 21 cm. and 7 cm. was melted and converted into small cubes with edge length 14 cm. for each.

Calculate the number of these cubes.

4 The inner dimensions of a cuboid-shaped box are 54 cm. , 60 cm. and 30 cm. , it is needed to put inside it cube-shaped packets of biscuits whose edge length is 6 cm.

Find the number of packets of biscuits which fill the box.
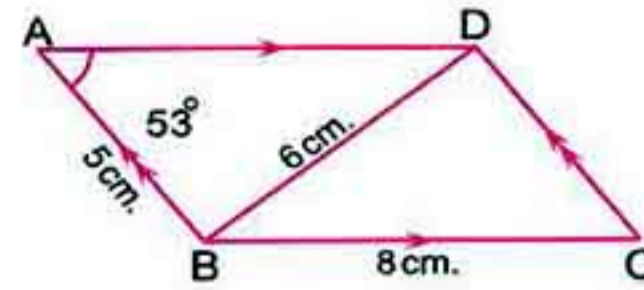
24

5 *In the opposite figure :*

ABCD is a parallelogram in which

m (∠ BAD) = 53° , AB = 5 cm.

, BC = 8 cm. and BD = 6 cm.

Find : **(1)** m (∠ BCD)

(2) The perimeter of △ DBC

Sheet **6**

From lesson **1** unit **3**
to lesson **6** unit **3**

Total mark **20**

1 *Complete :*

[a] The litre is a unit for measuring ·········

[b] $4\frac{2}{5}$ litres = ·········· cm³

[c] 3 litres = ·········· dm³

[d] 0.45 m³ = ·········· litres

[e] 680 litres = ·········· m³

5

2 *Choose the correct answer between brackets :*

[a] The inner dimensions of a cuboid container is 20 cm. , 20 cm. and 30 cm. , its capacity = ·········· litres.

(0.12 *or* 1.2 *or* 12 *or* 120)

[b] $\frac{3}{4}$ litre = ·········· mL. (0.75 *or* 7.5 *or* 750 *or* 75)

[c] Decimetre is a unit for measuring ··········

(capacity *or* volume *or* length *or* weight)

[d] 38 millilitres = ·········· cm³ (38 000 *or* 3 800 *or* 380 *or* 38)

[e] The two diagonals are perpendicular in ··········

(rectangle *or* rhombus *or* parallelogram *or* trapezium)

5

3 [a] A tin in the shape of a cuboid of internal dimensions are 30 cm. , 25 cm. and 40 cm. is filled with oil. Find the price of the oil if the price of one litre is L.E. 3.5

[b] A cube-shaped tin of inner edge length 40 cm. is full of oil. It is needed to put the oil in a number of bottles each of capacity half a litre. How many bottles are needed ?

4

4 [a] The capacity of a bottle is $\frac{3}{4}$ litres , is filled with alkohol. It is wanted to put this amount in small bottles which the capacity of each is 25 cm³ Find the number of small bottles.

[b] 3.6 litres of water are poured in a cuboid-shaped vessel with a square-base of side length 20 cm. Find the height of water in the vessel.

3

5 [a] A building worker used 1 500 bricks to build a wall. Calculate the volume of the wall in m³ if the brick is in the shape of a cuboid of dimensions 0.25 m. , 0.12 m. and 0.06 m.

[b] Find the volume of cube whose edge length is equal to the side length of an equilateral triangle of perimeter 18 cm.

3

26

S heet 7

1 *Complete each of the following :*

[a] The data that describe the conditions of individuals using words is called ············

[b] The data that consists of numbers to represent a certain phenomenon is called ············

[c] If the dimensions of a cuboid are equal , then it is called a ············

[d] *In the opposite figure :*

ABCD is a rhombus in which m ($\angle$ A) = 118°

, then m ($\angle$ B) = ············°
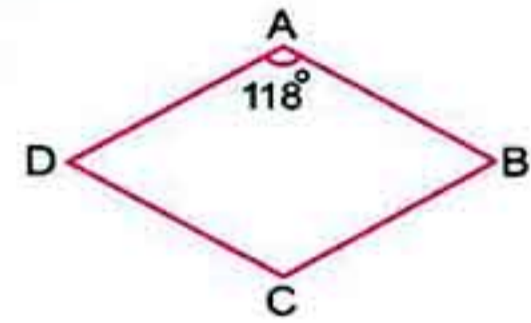
[e] The birth date is ············ data.

2 *Choose the correct answer between brackets :*

[a] The opposite data are descriptive except ············

(the favorite colour **or** birth place **or** age **or** blood species)

[b] The opposite data are quantitative except ············

(length **or** weight **or** age **or** blood species)

[c] If the edge length of a cube = 4 cm. , then its volume = ············ cm³.

(6 **or** 8 **or** 24 **or** 64)

[d] The volume of the cuboid is 36 cm³. , with its base is square shaped of side length 3 cm. , then its height = ············ cm.

(108 **or** 12 **or** 9 **or** 4)

[e] 850 millilitres = ············ litres.

(0.85 **or** 85 **or** 0.085 **or** 850 000)

3 Read the written data on the opposite bottle , then classify them into descriptive data and quantitative data.

Scent of women
made in France
50 mL
price : L.E180

27

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الصف السادس الابتدائي   موقع ذاكرولي التعليمي   المعاصر

Worksheets

4 The base of cuboid is a rectangle whose perimeter = 80 cm. and the ratio between its length to its width = 5 : 3 , calculate its volume if its height is 7 cm.

5 **[a]** The opposite card is a membership card of a library , answer :

(1) What are the quantitative data ?

(2) What are the descriptive data ?

Egyptian Library
Name : ....
Age : ....
Job : ....
Membership No. : ....
Personal photo
Library stamp

[b] *In the opposite figure :*

ABCD is a parallelogram in which

m ($\angle$ BAC) = m ($\angle$ DAC) , m ($\angle$ B) = 100°

Find : **(1)** m ($\angle$ D)

(2) m ($\angle$ BAC)
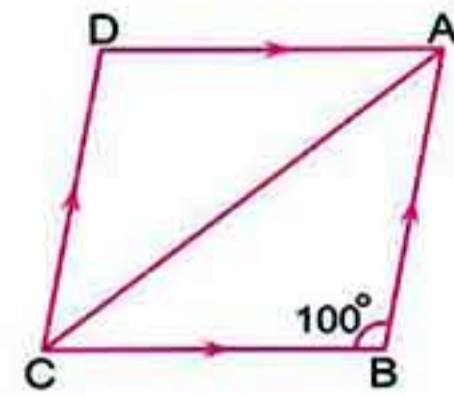
S heet **8**

From lesson **1** unit **3**
to lesson **2** unit **4**

Total mark **20**

1 Bassem wants to know the favourite sport for the students in his classroom.

The number of students is 36 students.

He asked everyone , the answers were :

(Volleyball - football - football - swimming - tennis - football - walking - swimming
- volleyball - walking - football - tennis - football - football - gymnastics - walking
- tennis - tennis - swimming - football - swimming - walking - football - walking
- tennis - basketball - swimming - swimming - football - basketball - football
- walking - swimming - football - football - swimming)

[a] Form a frequency table for this data.

[b] What is the number of pupils who prefer tennis ?

2 *The following table shows the produced amount of vegetables in tons by a farm in a year :*

Vegetable	Tomato	Eggplant	Green beans	Potato	Cucumber	Total
No. of tons	20	14	5	25	16	80

[a] Which is the vegetable that has the greatest number of produced tons ? and what is the order of it among the produced vegetables if you arrange them according to the produced amount of each kind ascendingly ?

[b] How many tons of tomato are produced ? And what is the percentage of it ?

3 [a] *In the opposite figure :*

XYZL is a parallelogram in which

m (∠ Y) = 118° , m (∠ XZY) = 27° , find :

(1) m (∠ YXZ)   (2) m (∠ LZX)

(3) m (∠ LXZ)   (4) m (∠ L)
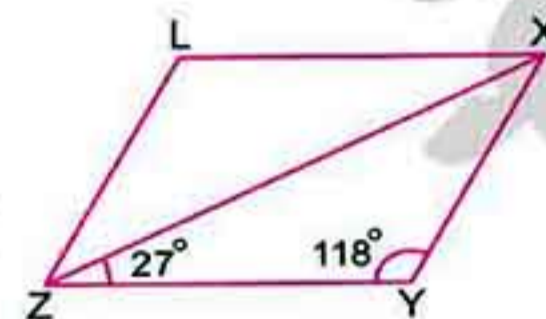
[b] A metallic cube is of edge length 30 cm. , it is melted to be use in manufacture and it is converted into cuboid in which the dimensions of the base are 40 cm. and 25 cm. Calculate its height.

29

Worksheets

4 *Here are the evaluations of 20 students in mathematics :*

good	pass	pass	good	weak
excellent	very good	pass	very weak	very good
good	weak	good	pass	pass
good	pass	weak	good	pass

[a] Form a frequency table of this data.

[b] What is the most common evaluation among the students ?

[c] What is the least common evaluation among the students ?

5 [a] If the capacity of a tank in the shape of cuboid is 24 000 litres.
Find the area of the base if the height is 3 metres.

[b] Which is greater in volume ?
A cube of edge length 9 cm. or a cuboid with dimensions 8 cm. , 9 cm. and 10 cm.

Sheet **9**

From lesson **1** unit **3**
to lesson **3** unit **4**

Total mark **20**

1 *Complete each of the following :*   **5**

[a] The difference between the greatest value and the smallest value in a set of individuals is called ···········

[b] If the marks of 4 pupils in a test are 26 , 30 , 13 and 29 , then the range of these marks = ···········

[c] If the values of a frequency distribution lie between 10 and 60 , then the range of this distribution = ···········

[d] If one of the angles of a parallelogram is right , then it will be called ··········

[e] A cuboid with a square base of side length 4 cm. and height 5 cm. , then its volume = ········· cm^3.

2 *The following data shows the number of holidays that 40 workers of a factory have got during a year :*   **3**

12	27	14	25	13	22	14	26	11	15
30	21	15	22	23	28	16	21	30	25
27	16	22	20	26	30	21	15	16	23
15	30	28	21	24	15	27	30	21	28

Form a frequency table by using the sets 11 − , 16 − , 21 − , ... , the length of each is 5 days , then find the number of workers who have got 21 days or more in the year.

3 *The following table gives the frequency distribution of the daily wages in L.E. for 50 workers :*   **4**

Set of wages	10 −	12 −	14 −	16 −	18 −	20 −	22 −
No. of workers	6	7	12	10	9	4	2

[a] Find the number of workers whose wages are less than L.E. 16

[b] What is the percentage of workers whose wages are L.E. 20 or more ?

31

Worksheets

4 *The following table gives the frequency distribution of the marks of 40 pupils in mathematical examination :*

Sets	10 –	20 –	..... –	40 –	50 –	Total
Frequency	4	8	12	10	.....	40

[a] Complete the table.

[b] Find the number of pupils whose marks are less than 40 and its percentage.

5 [a] A cubic glass vessel , its inner edge length is 20 cm. This vessel contains an amount of water. If we throw a metallic piece in it then the water level raised 3 cm. because of that.
Find the volume of the metallic piece.

[b] A cube-shaped vessel , its internal edge length is 20 cm. It is filled with cooking oil :

(1) Calculate the capacity of the vessel.

(2) If the price of one litre of cooking oil is 14 pounds , calculate the price of all the cooking oil.

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Sheet **10**

1 *The following table gives the frequency distribution of the ages of 40 students in a school :*

The age	6 –	8 –	10 –	12 –	14 –	Total
Number of students	8	9	6	12	5	40

Draw the frequency curve for this distribution.

2 *The following table shows the marks of 100 pupils in maths :*

Marks	20 –	30 –	40 –	50 –	Total
Number of pupils	15	30	40	15	100

[a] What is the number of the pupils who got less than 40 marks ?

[b] Draw the frequency curve for this distribution.

3 *Complete each of the following :*

[a] A parallelogram is a rhombus when its two diagonals are ············

[b] 0.3 litre = ············ millilitres.

[c]   ············ ············

[d] If the range of frequency distribution is 23 and the lowest value is 35 , then the highest value is ············

[e] The centre of the set which its lower limit = 4 and its upper limit = 10 is ············

4 **[a]** The sum of areas of all faces of a cube is 54 cm². Calculate its volume.

[b] 72 litres of molasses are needed to be put in tins of the same kind , each has a rectangular-shaped base with dimensions 18 cm. and 10 cm. , and height 16 cm. How many tins are needed ?

5 *The following table shows the ages of visitors to an exhibition within an hour of the day :*

Visitor's age	10 –	20 –	30 –	40 –	50 –	Total
Number of visitors	6	9	12	10	8	45

(1) What is the number of visitors whose ages are less than 40 years ?

(2) Draw the frequency curve for this distribution.

Guide Answers of Worksheets

First — Worksheets on unit ① and unit ②

Sheet 1

1
[a] 1:6   [b] 24   [c] 1:4
[d] $\frac{3}{5}$ [e] 1:4

2
[a] a way of comparing between two quantities by division.
[b] 9 , 17   [c] 1:2 π
[d] 1:5   [e] 3:1

3
[a] 5:9   [b] 4:5   [c] 9:4

4
[a] The number of boys = 200 − 80 = 120 boys, the ratio between the number of boys and the number of girls = 120 : 80 = 3:2

[b] (1) 5 : $\frac{5}{4}$ (×4)
20 : 5 (÷5)
4:1

(2) 2 $\frac{2}{3}$: 1 $\frac{1}{3}$
$\frac{8}{3}$: $\frac{4}{3}$ (× 3)
8:4 (÷4)
2:1

(3) $\frac{1}{3}$: 0.2
$\frac{1}{3}$: $\frac{2}{10}$ (× 30)
10 : 6 (÷ 2)
5:3

(4) $\frac{15}{45}$ = 15 : 45 = 1 : 3

5
[a] The perimeter of the square = 4 × 2 = 8 cm.
the perimeter of the rectangle = 2 (4 + 6) = 20 cm.
the ratio between the perimeter of the square and the perimeter of the rectangle.
= 8 : 20 = 2 : 5

Answers of worksheets

[b] The area of the square = 2 × 2 = 4 cm².
the area of the rectangle = 4 × 6 = 24 cm².
the ratio between the area of the square and the area of the rectangle
= 4 : 24 = 1 : 6

Sheet 2

1
[a] 1:2   [b] 1:2   [c] 1:3
[d] 1:1   [e] 2

2
[a] 1:π   [b] 5:4   [c] 2:3
[d] 8:9   [e] 3:4

3
[a] 6 days : 2 weeks
6 days : 14 days
6 : 14 (÷ 2)
3 : 7

[b] 5 dm. : 5 m.
5 dm. : 50 dm.
5 : 50 (÷ 5)
1 : 10

[c] 5 kg. : 7 000 gm.
5 000 gm. : 7 000 gm.
5 000 : 7 000 (÷ 1 000)
5 : 7

[d] $\frac{1}{2}$ L. : 250 mL.
500 mL. : 250 mL.
500 : 250 (÷ 250)
2 : 1

4
The ratio between the two distances
= 350 m. : 1.4 km.
= 350 : 1 400 (÷ 10)
= 35 : 140 (÷ 7)
= 5 : 20 (÷ 5)
= 1 : 4

5
The area of the triangle ABC = $\frac{1}{2}$ × 3 × 8 = 12 cm².
The area of the parallelogram LMNO = 3 × 5 = 15 cm².

55

Answers of worksheets

Sheet 3

[1]
[a] 160   [b] the first number / the second number
[c] 3 : 4   [d] 15 : 6   [e] 1 : 5

[2]

Boys	:	Girls
2	:	3
12	:	?
× 6		

The number of girls :

The number of girls = $\frac{3 \times 12}{2}$ = 18 girls.

[3]
[a] 1   [b] 8 : 5   [c] 24
[d] 6   [e] 15

[4]
First amount : Second amount : Sum

| 2 | : | 7 | : | 9 |
| ? | : | ? | : | 1800 |

The first amount = $\frac{2 \times 1800}{9}$ = L.E. 400

The second amount = $\frac{7 \times 1800}{9}$ = L.E. 1400

[5]
Length : Width : Difference

| 7 | : | 4 | : | 3 |
| ? | : | ? | : | 21 |

The length = $\frac{7 \times 21}{3}$ = 49 cm.

The width = $\frac{4 \times 21}{3}$ = 28 cm.

The area of the rectangle = 49 × 28 = 1372 cm².

---

[2]
[a] First angle : Second angle : Third angle : Sum

| 3 | : | 4 | : | 5 | : | 12 |
| ? | : | ? | : | ? | : | 180° |

The measure of first angle = $\frac{3 \times 180°}{12}$ = 45°

The measure of second angle = $\frac{4 \times 180°}{12}$ = 60°

The measure of third angle = $\frac{5 \times 180°}{12}$ = 75°

[3]
[a] 5 : 8   [b] 6 : 4 : 3   [c] 1 : 3
[d] 35   [e] 3

First number : Second number : Sum

| 5 | : | 6 | : | 11 |
| ? | : | ? | : | 297 |

First number = $\frac{5 \times 297}{11}$ = 135

Second number = $\frac{6 \times 297}{11}$ = 162

[4]
[a] 1ˢᵗ side : 2ⁿᵈ side : 3ʳᵈ side : Sum

| 2 | : | 6 | : | 7 | : | 15 |
| ? | : | ? | : | ? | : | 51 |

The length of 1ˢᵗ side = $\frac{4 \times 51}{17}$ = 12 cm.

The length of 2ⁿᵈ side = $\frac{6 \times 51}{17}$ = 18 cm.

The length of 3ʳᵈ side = $\frac{7 \times 51}{17}$ = 21 cm.

[5]
[b] Adam's money : Nada's money : Seif's money : Difference

| 6 | : | 5 | : | 2 | : | 4 |
| ? | : | ? | : | 200 | : | ? |

Adam's money = $\frac{6 \times 200}{4}$ = L.E. 300

Nada's money = $\frac{5 \times 200}{4}$ = L.E. 250

Seif's money = $\frac{2 \times 200}{4}$ = L.E. 100

Mohamed : Hany : Amr : Sum

1	:	2	:	3	:	?
?	:	6	:	?	:	?
3				13		988

The ratio between the area of the triangle ABC and the area of the parallelogram LMNO
= 12 cm² : 15 cm²
= 12 : 15 (÷ 3)
= 4 : 5

Sheet 5

[1]
[a] 4   [b] 500   [c] 200   [d] 2

[2]
[a] The average speed = $\frac{270}{3}$ = 90 km./hr.

[b]
Boys	:	Girls	:	Sum
6	:	7	:	13
?	:	?	:	260

The number of boys = $\frac{6 \times 260}{13}$ = 120 boys.

The number of girls = $\frac{7 \times 260}{13}$ = 140 girls.

[3]
Bassem : Mina : Amgad

| 3 | : | 4 | : | 5 |
| 24 | : | ? | : | ? |

The share of Mina = $\frac{4 \times 24}{3}$ = L.E. 32

The share of Amgad = $\frac{5 \times 24}{3}$ = L.E. 40

[4]
[b] The production rate of the factory

= $\frac{200}{10}$ = 20 bottles/hour.

[5]
[a] The rate of production of the machine

= $\frac{450}{3}$ = 150 kg./hr.

[b] The rate of the worker paint in 7 hours

What the worker paint in 7 hours = $\frac{45}{5}$ = 9 m². / hr.

= 7 × 9 = 63 m².

The share of Mohamed = $\frac{3 \times 988}{13}$ = L.E. 228

The share of Hany = $\frac{6 \times 988}{13}$ = L.E. 456

The share of Amr = $\frac{4 \times 988}{13}$ = L.E. 304

Sheet 6

Answers of worksheets

[1]
[a] an equality of two or more ratios.

[b] $\frac{7}{12} = \frac{28}{48} = \frac{21}{36}$ [c] $\frac{8}{24} = \frac{1}{3} = \frac{5}{15}$

[d] $\frac{4}{6} = \frac{12}{18} = \frac{2}{3}$ [e] 3 : 5

[2]

| Petrol in litre | 12 | | 36 |
| Distance in km. | 150 | 100 | 450 |

| 1.3 | 0.5 | 1 | 3 | 4.5 | 5.5 | 0.67 |
| 13 | 5 | 10 | 30 | 45 | 55 | 6.7 |

[3]
[a] 4 : the means   [b] 24
[c] 4 × second   [d] 27
[e] b × x

[4]
The number of boys = 400 − 250 = 150 boys.

[a] 5 : 3   [b] 3 : 8

[5]
The rate of the machine takes = $\frac{25}{4}$ = 6.25 hr.

The machine takes = 16 ÷ 4 = 4 units / hr.

Sheet 7

[1]
[a] the means   [b] 24
[c] 4 × second   [d] 27

[2]
[a] 44   [b] 15   [c] 8   [d] 3

[3]
[a] 4   [b] 6   [c] 7
[d] 3 : 4   [e] $\frac{4}{3}$

[4]
[a] Litre : km.

| 20 | : | 180 |
| ? | : | 540 |

[b] The rate of consumption = $\frac{20 \times 540}{180}$ = 60 litres.

[5]
[a] 1ˢᵗ building : 2ⁿᵈ building

| 3 | : | 7 |
| ? | : | 35 |

[b] The height of 1ˢᵗ building = $\frac{3 \times 35}{7}$ = 15 m

---

Sheet 4

[1]
[a] 2 : 3 : 5   [b] 5 : 10 : 7   [c] 5 : 7 : 9
[d] 6 : 10 : 25   [e] 1 : 4

Answers of worksheets

Sheet 8

5
length in drawing : length in reality
1 : 2
[b] 6   [d] 5 , 13

[c] 1 : 1 000   [e] reduction

4 900
1 400

The needed time = $\frac{4\,900 \times 2}{1\,400}$ = 7 hours.

5 m.
21
3
1 400

[b] 1ˢᵗ building : 2ⁿᵈ building : 3ʳᵈ building
3 : 4 : 5
21 : ? : ?

The height of the second building
= $\frac{4 \times 21}{3}$ = 28 m.

The height of the third building
= $\frac{5 \times 21}{3}$ = 35 m.

2
[a] The drawing scale = $\frac{4}{2\,000\,000}$ = 1 : 500 000

It means that every 1 cm. on the map
represents 5 km. in reality.

[b] The ratio of magnification = $\frac{20}{0.4}$ = 50 : 1

1
[a] Length in drawing : Length in reality
1 : 1 440
3.5 : ?

The real length of the building
= 3.5 × 1 440 = 5 040 cm. = 50.4 m.

[b] Length in drawing : Length in reality
1 : 1 440
3.5 : ?

The drawing scale = $\frac{13}{18\,720}$ = 1 : 1 440

4
[a] 1ˢᵗ factory : 2ⁿᵈ factory : 3ʳᵈ factory : Sum
3 : 2 : 1 : 6
? : ? : ? : 9 600

The production of the 1ˢᵗ factory
= $\frac{3 \times 9\,600}{6}$ = 4 800 sets.

Sheet 9

5
[a] Length in drawing : Length in reality
1 : 3 000
3.6 : ?

The length of the first dimension
= $\frac{3.6 \times 3\,000}{1}$ = 10 800 cm. = 108 m.

The length of the second dimension
= 2 × 3 000 = 6 000 cm. = 60 m.

The real area of the garden
= 108 × 60 = 6 480 m.²

[b] Length in drawing : Length in reality
1 : 3 000
2 : ?

The production of the 2ⁿᵈ factory
= $\frac{2 \times 9\,600}{6}$ = 3 200 sets.

The production of the 3ʳᵈ factory
= $\frac{1 \times 9\,600}{6}$ = 1 600 sets.

3
Length in picture : Length in reality
200 : 1
? : 0.14

Length in picture = 200 × 0.14 = 28 mm.

The map distance = $\frac{22\,000\,000}{500\,000}$ = 44 cm.

22 000 000
500 000

1
1ˢᵗ : 2ⁿᵈ : 3ʳᵈ : Sum
5 : 3 : 4 : 12
? : ? : ? : 360

The 1ˢᵗ person's share = $\frac{5 \times 360}{12}$ = L.E.150

The 2ⁿᵈ person's share = $\frac{3 \times 360}{12}$ = L.E.90

The 3ʳᵈ person's share = $\frac{4 \times 360}{12}$ = L.E.120

Answers of worksheets

Sheet 10

[b] 1ˢᵗ number : 2ⁿᵈ number : Difference
5 : 7 : 2
? : ? : 12

The 1ˢᵗ number = $\frac{5 \times 12}{2}$ = 30

The 2ⁿᵈ number = $\frac{7 \times 12}{2}$ = 42

2
1ˢᵗ : 2ⁿᵈ : 3ʳᵈ : Sum
15 : 25 : 20 : (+ 1 000)
15 000 : 25 000 : 20 000 : ?
(+ 1 000)

The 1ˢᵗ person's share = $\frac{3 \times 5\,520}{12}$
= L.E. 1 380

The 2ⁿᵈ person's share = $\frac{5 \times 5\,520}{12}$
= L.E. 2 300

The 3ʳᵈ person's share = $\frac{4 \times 5\,520}{12}$
= L.E. 1 840

5
The share of the wife = $\frac{1}{8}$ × 192 = 24 feddans.
The remainder = 192 − 24 = 168 feddans.
, if the share of one daughter = 1 part,
then the share of the son = 2 parts
The total number of equal parts
= 3 × 1 + 2 × 2 = 7
The value of each part = $\frac{168}{7}$ = 24 feddans.
The share of each son = 24 × 2 = 48 feddans.
The share of each daughter = 24 × 1 = 24 feddans.

The share of first = $\frac{2 \times 330}{11}$ = 60 kg.
The share of second = $\frac{3 \times 330}{11}$ = 90 kg.
The share of third = $\frac{6 \times 330}{11}$ = 180 kg.

1 [a] a ratio its second term is 100
[b] 24   [c] 175   [d] $\frac{7}{10}$ [e] 45

2 [a] 0.07 = $\frac{7}{100}$ = 7%
[b] $\frac{3}{5}$ = $\frac{3}{5}$ × 100% = 60%
[c] $\frac{9}{20}$ = $\frac{9}{20}$ × 100% = 45%
[d] 0.6 = $\frac{6}{10}$ = 60%

3
Since $\frac{x}{40}$ = $\frac{35}{100}$
So , x = $\frac{35 \times 40}{100}$ = 14

4
[a] The percentage of absentees
= $\frac{6}{48}$ × 100% = 12.5%
The percentage of attendance
= 100% − 12.5% = 87.5%

3
[a] Length in drawing : Length in reality
1 : 1 000 000
5 : ?

The real distance = $\frac{5 \times 1\,000\,000}{1}$
= 5 000 000 cm.
= 50 km.

[b] 1ˢᵗ factory : 2ⁿᵈ factory : 3ʳᵈ factory : Sum
5 : 4 : 3 : 12
? : ? : 3 600 : ?

The production of first factory
= $\frac{5 \times 3\,600}{3}$ = 6 000 machines.
The production of second factory
= $\frac{4 \times 3\,600}{3}$ = 4 800 machines.

4
First : Second : Third : Sum
2 : 3 : 6 : 11
? : ? : ? : 330

4
[b] Heba : Hend : Nada : Nada-Heba : Total
2 : 3 : 4 : 2 : 15
? : ? : ? : 9
The total amount of money
= $\frac{9 \times 15}{2}$ = L.E. 67.5

Answers of worksheets

Sheet 11

1 [a] 70 [b] 12 [c] 135
[d] 20

2

C.P.	:	Profit	:	S.P.
100	:	10	:	110
?	:	10	:	550

The C.P. = $\dfrac{100 \times 550}{110}$ = L.E. 500

[b]

Original	:	Shrinking	:	After shrinking
100	:	5	:	95
10	:	?	:	?

The length after shrinking
= $\dfrac{10 \times 95}{100}$ = 9.5 m.

3 [a] The percentage of the left distance
= 100% − (42% + 28%) = 30%
The left distance = 30% × 120 = 36 km.

[b]

Deposit	:	Interest	:	Total
100	:	11	:	111
3 000	:	?	:	?

The total amount after one year
= $\dfrac{3\,000 \times 111}{100}$ = L.E. 3 330

4 [a] The discount value
= 1 450 − 1 160 = L.E. 290
The discount percentage
= $\dfrac{290}{1\,450}$ × 100% = 20 %

[b]

XY	:	YZ	:	ZX	:	Perimeter
4	:	5	:	7	:	16
?	:	?	:	28	:	?

The perimeter = $\dfrac{28 \times 16}{7}$ = 64 cm.

5 [a] The percentage = $\dfrac{117}{936}$ × 100% = 12.5%
[b] The drawing scale = $\dfrac{\text{length in drawing}}{\text{length in reality}}$
= $\dfrac{8}{4\,000\,000}$ = 1 : 500 000

---

5 The cost price = 960 + 20 = L.E. 980

C.P.	:	Profit	:	S.P.
100	:	20	:	120
980	:	?	:	?

The S.P. = $\dfrac{980 \times 120}{100}$ = L.E. 1 176

Second — Worksheets on unit ③ and unit ④

Sheet 1

1 [a] square , rectangle [b] 130°
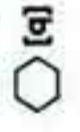[c] equal in length [d] rectangle
[e] a square

2 m (∠ADC) = 120°

3 AB = 3 cm. , BC = 5 cm. , AC = 5 cm.
The length of $\overline{DC}$ = 5 cm.
The length of $\overline{AD}$ = 7 cm.

4 (1) The length of $\overline{BD}$ = 8 cm.
(2) The perimeter of △ABM = 4 + 4 + 3 = 11 cm.

5 (1) m (∠A) = 60° , m (∠ABD) = 60°
(2) equilateral triangle
(3) The perimeter = 4 × 7 = 28 cm.

Answers of worksheets

Sheet 2

1 [a] □ [b] [c]
[d]

2 [a] square [b] [c] 3
[d] rectangle

3 [a] 2x = 60° , then x = 30°
, y + 10° = 180° , then y = 180° − 60° = 120°
, then y = 110°
[b]

4 m (∠D) = 100°
[b] m (∠ACD) = 180° − (100° + 30°) = 50°
[c] The length of $\overline{AD}$ = 5 cm.

5 [a] △ [b]
[c] △

Sheet 3

1 Fig. (1) : 13 Fig. (2) : 10 Fig. (3) : 9

2 [a] equal in area , parallel [b] 12 , 8
[c] 17 000 [d] cube
[e] the volume of a cube whose edge length is 1 cm.

---

3 [a] 180° [b] 6 [c] 3.25
[d] 7 000 [e] equal in length

4 m (∠ADC) = 110°
the perimeter of △ BCD = 7 + 6 + 3.8 + 3.8
= 20.6 cm.

5 [a] The order is : 50 dm³ , 500 000 cm³
and 5 m³.
[b] (1) The perimeter of figure ABCD = 4 × 7
= 28 cm.
(2) m (∠ABC) = 180° − 60° = 120°

Sheet 4

1 [a] base area [b] 240 [c] 3 960 cm³
[d] volume of cuboid , height
[e] rectangle , square

2 [a] (1) m (∠ABC) = 120°
(2) The perimeter = 5 + 3 + 5 + 3 = 16 cm.
[b] The volume of the box
= 12 × 6 × 18 = 1 296 cm³
The volume of each piece
= 2 × 1 × 3 = 6 cm³
The number of pieces = 1 296 ÷ 6 = 216 pieces.

3 [a] 6.5 [b] 6 [c] 6
[d] 3 [e] volume

4

1st dimension	:	2nd dimension	:	3rd dimension	:	Sum
2	:	3	:	5	:	10
?	:	?	:	?	:	240

The first dimension = $\dfrac{2 \times 240}{10}$ = 48 cm.
The second dimension = $\dfrac{3 \times 240}{10}$ = 72 cm.

Answers of worksheets

Sheet 5

The third dimension $= \dfrac{5 \times 240}{10} = 120$ cm.

The volume of the cuboid $= 48 \times 72 \times 120 = 414\ 720$ cm³

5) The base area $= 20 \times 20 = 400$ cm²

The height of water $= \dfrac{3\ 600}{400} = 9$ cm.

1 [a] edge length · itself · itself   [b] 5
[c] 27   [d] 216
[e] 8 cm³

2 [a] 10 000   [b] 5
[d] rhombus   [e] 490 cm³
[c] 8

3 [a] 12   [b] 750   [c] length
[d] rhombus   [e] 38

4 [a] The volume of the cube $= 5 \times 5 \times 5 = 125$ cm³.
The volume of the cube $= 6 \times 5 \times 4 = 120$ cm³.
The volume of the cube is greater.

[b] The volume of the cuboid $= 56 \times 21 \times 7 = 8\ 232$ cm³.
The volume of the cube $= 14 \times 14 \times 14 = 2\ 744$ cm³.
The number of cubes $= 8\ 232 \div 2\ 744 = 3$ cubes.

Sheet 6

5 (1) m (∠ BCD) = 53°
(2) The perimeter of Δ DBC = 6 + 8 + 5 = 19 cm.
The volume of each packet $= 6 \times 6 \times 6 = 216$ cm³
The number of packets $= \dfrac{97\ 200}{216} = 450$ packets.
The volume of the box $= 54 \times 60 \times 30 = 97\ 200$ cm³

4 [a] The number of needed bottles $= 64 + \dfrac{1}{2} = 128$ bottles.
The number of small bottles $= 750 \div 25 = 30$ bottles
[b] The base area $= 20 \times 20 = 400$ cm²
The height of water $= \dfrac{3\ 600}{400} = 9$ cm.

3 [a] The capacity of the tin $= 30 \times 25 \times 40 = 30\ 000$ cm³ = 30 litres.
[b] The price of the oil $= 30 \times 3.5 = $ L.E. 105
The capacity $= 40 \times 40 \times 40 = 64\ 000$ cm³ = 64 litres.

5 [a] The volume of a brick $= 0.25 \times 0.12 \times 0.06 = 0.0018$ m³.
The volume of the wall $= 0.0018 \times 1\ 500 = 2.7$ m³.
[b] The edge length of cube $= \dfrac{18}{3} = 6$ cm.
The volume of cube $= 6 \times 6 \times 6 = 216$ cm³.

1 [a] capacity   [b] 4 400   [c] 3
[d] 450   [e] 0.68

Sheet 7

1 [a] descriptive data   [b] quantitative data
[c] cube   [d] edge
[e] quantitative

2 [a] age   [b] blood species
[c] 64   [d] 4
[e] 0.85

Answers of worksheets

Sheet 8

3 The descriptive data : Scent of women and made in France
The quantitative data : 50 mL and price L.E. 180

4 Half of the perimeter $= \dfrac{80}{2} = 40$ cm.

Length	:	Width	:	Sum
5	:	3	:	8
?	:	?	:	40

The length $= \dfrac{5 \times 40}{8} = 25$ cm.
The width $= \dfrac{3 \times 40}{8} = 15$ cm.
The volume $= 25 \times 15 \times 7 = 2\ 625$ cm³.

5 [a] (1) Age and membership number.
(2) Name , job , personal photo and library stamp.
[b] (1) m (∠ BAD) = 180° – 100° = 80°,
(2) m (∠ D) = 100°
m (∠ BAC) = $\dfrac{80°}{2}$ = 40°

[a]

Sport	Tally	Frequency
Football	卌 卌 II	12
Volleyball	II	2
Basketball	II	2
Swimming	卌 III	8
Tennis	卌	5
Walking	卌 I	6
Gymnastics	I	1
Total		36

[b] The number of pupils who prefer tennis = 5 pupils

[a] The vegetable that has the greatest number of produced tons is potato and its order is the fifth.

Sheet 9

2

Sport	Football	Volleyball	Basketball	Swimming	Tennis	Walking	Gymnastics	Total
Frequency	12	2	2	8	5	6	1	36

3 [b] The number of produced tons of tomato = 20 tons and its percentage $= \dfrac{20}{80} \times 100\% = 25\%$

3 [a] (1) 35°   (2) 35°   (3) 27°   (4) 118°
[b] The volume of the cube $= 30 \times 30 \times 30 = 27\ 000$ cm³
The volume of the cuboid = the volume of the cube = 27 000 cm³
The base area of the cuboid $= 40 \times 25 = 1\ 000$ cm²
The height of cuboid $= \dfrac{27\ 000}{1\ 000} = 27$ cm.

4 [a]

Evaluation	Tally	Frequency
Very weak	I	1
Weak	III	3
Pass	卌 II	7
Good	卌 I	6
Very good	II	2
Excellent	I	1
Total		20

[b] The most common evaluation is pass.
[c] The least common evaluations are very weak and excellent.

[a]

Evaluation	Very Weak	Weak	Pass	Good	Very good	Excellent	Total
Frequency							

1 [a] the range   [b] 17
[c] rectangle   [d] 100
[e] 50

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Answers of worksheets

[2]

Sets	Tally	Frequency
11 –	ЖЖ	10
16 –	////	4
21 –	ЖЖ ///	13
26 –	ЖЖ ЖЖ ///	13
Total		40

The number of workers = 26

[3]
[a] The number of workers whose wages are less than L.E. 16 = 25 workers.

[b] The percentage = $\frac{6}{50} \times 100\% = 12\%$

[4]

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	4	8	12	10	6	40

[b] The number of pupils whose marks are less than 40 = 24 pupils and their percentage = $\frac{24}{40} \times 100\% = 60\%$
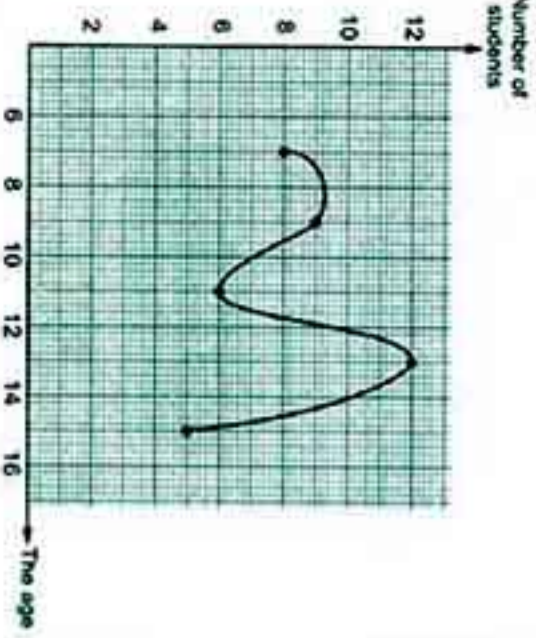
[5]
[a] The volume of the metallic piece
= 20 × 20 × 3 = 1 200 cm³.

[b] (1) The capacity of the vessel
= 20 × 20 × 20 = 8 000 cm³
= 8 000 ÷ 1 000 = 8 litres.
(2) The price of all oil = 8 × 14 = 112 pounds.

Sheet 10

1

[2]
[b] 45 pupils
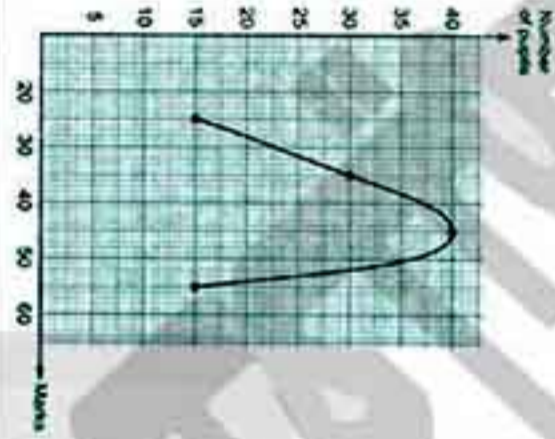
[3]
[a] Perpendicular **[b]** 300 **[c]**
[d] 58
[e] 7

[4]
[b] The capacity of each tin = 18 × 10 × 16
= 2 880 cm³.
The number of tins = 72000 ÷ 2880 = 25 tins.

[a] The area of one face = 54 ÷ 6 = 9 cm²
The edge length = 3 cm.
The volume = 3 × 3 × 3 = 27 cm³.
= (3 × 3) cm².

5
(1) 27 visitors.
(2)